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ILLINOIS STATE MUSEUM
THORNE DEUEL, Museum Director

REPORT OF INVESTIGATIONS

No. 9

THE ZIMMERMAN SITE

A Report on Excavations
at the
Grand Village of Kaskaskia
La Salle County, Illinois

JAMES A. BROWN, Editor



Printed by the Authority of the State of Illinois
Springfield, Illinois

1961

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JAMES A. BROWN, Editor

From the Reports by
Kenneth G. Orr

And

J. Joe Bauxar, Elaine A. Bluhm, Ruth Howard, Charles E. Gillette, William H. Sears,
Robert L. Shalkop and Sara J. Tucker



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PREFACE

Interest in archaeological sites of the historic period has been increasing to the point where every bit of extant information is valuable, and this is especially true of sites that are as noteworthy and well documented as the Zimmerman site. The site, which has been identified with the Kaskaskia villages of La Salle's time, has been the object of one full season's field work by a joint University of Chicago-Illinois State Museum expedition in 1947 as well as much testing and collecting over the years.

The excavations were carried out under the directorship of Dr. John C. McGregor for the Illinois State Museum and Dr. Kenneth G. Orr for the Department of Anthropology, University of Chicago. The staff during the summer field season consisted of William H. Sears, photographer; Elaine A. Bluhm, topographer; and Mrs. Kenneth G. Orr, cataloger. Professor T. Barton Akeley (Olivet College), Ruth Howard (University of Michigan), Richard S. Hagen, G. Ellis Burcaw, Charles E. and Gwyneth Gillette, Robert L. Shalkop, Susan F. Messenger, and Richard Trotter (cook) of the University of Chicago were the other members of the crew. The following autumn twelve graduate students from the Department of Anthropology spent one weekend digging in Grid B.

A preliminary report was partially prepared by the students under the editorship of Dr. Orr and Dr. McGregor, but it was never completed. After several years, J. Joe Bauxar re-analyzed some of the notes and material that were available to him. But much of the materials, notes, and reports have remained scattered and unorganized until the editor of this report undertook the responsibility of gathering together the manuscripts and drawings and assembling a unified report. This is essentially a compilation in which only as much reanalysis of the original notes and materials was attempted as was necessary to round out or clarify these reports. The editor assumes the complete responsibility for the selection of data and the conclusions that have been drawn from the data. This report does not exhaust the potentialities of the notes and collections from the site, and it is hoped that this report will stimulate new interest in this large and complex site, which still offers interesting possibilities to test hypotheses concerning late prehistoric cultural development as well as ethnohistorical correlations.

The editor would like to acknowledge the co-operation of the owners and farmers of the land on which the site is located; Mrs. Clara Zimmerman, Mr. Danner, Mr. Swanson, and Mr. Heally; and the Department of Public Works and Buildings for supplying the facilities at Buffalo Rock. To the parents of the late Donald E. Wray, Mr. and Mrs. Richard A. Wray, the editor would like to extend his appreciation for donating the important materials from the Zimmerman site that were in Don Wray's collection.

Numerous other individuals have aided me in completing this report through advice and encouragement and through the execution of the varied tasks that make up a report. Dr. Joseph R. Caldwell, who was responsible for initiating this report, has been particularly helpful. Others who have provided advice have been Dr. Thorne Deuel, Dr. Warren L. Wittry, Dr. Elaine A. Bluhm, and Dr. John C. McGregor. The contributions of Dr. Paul W. Parmalee, Curator of Zoology, Illinois State Museum, for the analysis of the faunal remains and of Mr. Leonard W. Blake of St. Louis, Missouri, and Dr. Hugh C. Cutler, Curator of Economic Botany, Missouri Botanical Garden, for the analysis of the plant remains are most gratefully acknowledged. Miss Faye M. Berry and Mrs. Gwyneth Gillette are thanked for their excellent work in preparing the drawings, and Mr. Charles Hodge is thanked for his able photographic work.

JAMES A. BROWN
May 11, 1961

CHAPTER I

INTRODUCTION

The investigation of the Zimmerman site was an outgrowth of the work of the Ethno-historical Laboratory of the University of Chicago. The director of the laboratory, Mrs. Sara Jones Tucker, was responsible for the location and identification of the site as the Grand Village of the Kaskaskia of La Salle's time (Tucker, 1946). This village is one of the few in Illinois that is well dated to an early period of European penetration and is not covered by modern urban or industrial development. A survey of the Starved Rock area by Tucker and preliminary testing by Dr. Richard S. MacNeish (1945), Dr. John C. McGregor (1945), and Mr. George H. Smith (1945) revealed the excellent opportunity there was to identify some of the late archaeological complexes in the State with historic tribes. Acting upon these prospects, Dr. Fay-Cooper Cole, then Chairman of the Department of Anthropology, University of Chicago, and Dr. Thorne Deuel, Director of the Illinois State Museum, planned a joint University-Museum expedition in which each would share expenses and responsibility. The project was deferred, however, until 1947 when Dr. Kenneth G. Orr, representing the University of Chicago, and Dr. John C. McGregor, representing the Illinois State Museum, joined forces in an expedition.

The main purpose of the expedition was to identify, in particular, the archaeological manifestations of the Iliniwek. During the same season, however, eight test pits were put down on the top of Starved Rock (Ls¹12) in order to determine if there was sufficient material to warrant intensive excavation at the presumed location of Fort St. Louis. The richness of the material and the concentrated stratigraphy of the Rock proved to be so much more interesting than the Zimmerman site that the following two

summers were devoted to the excavation of the Rock and the immediate vicinity. Reports on these other sites are in preparation.

*Historical Background**

Since the archaeological material at the Zimmerman site was in part associated with European materials, a review of the early history of the Indian occupation of the area is in order. A more detailed account can be found in Temple (1958).

Jolliet and Marquette, the first European explorers of the Illinois River, found in 1673 a Kaskaskia village of 73 cabins near Starved Rock. The same village was revisited by Father Marquette in 1675; Allouez sojourned there between 1675 and 1679; and Tonti was there in the summer of 1680. By the time La Salle and Tonti had arrived on the Illinois, the Kaskaskia had been joined by other Iliniwek villages from the banks of the Mississippi, and the community had grown to 400-550 cabins with a total population of between 6,000 and 9,000 persons. With the destruction of the Kaskaskia village in the fall of 1680 by the Iroquois, the Iliniwek abandoned the area for a period of about three years. Only after La Salle and Tonti had completed the construction of Fort St. Louis on the Rock during the winter of 1682-3 did the Iliniwek return. According to Temple (1958:158) a small band of Kickapoo briefly settled at the site of the destroyed village.

The Iliniwek community reassembled in a new village extending along the river that now only numbered about 300 cabins. It is probable that the community actually consisted of several contiguous tribal villages to judge by the implied organization

*This section is drawn largely from Bauxar's (1953) analysis of the Zimmerman site.

of the Iliniwek village of Lake Peoria (Thwaites, 1896-1901: 64:193). The more important of the Iliniwek groups seem to have been the indigenous Kaskaskia; the Peoria, Tapouaro and Coiracoentanon. Other tribes of the Iliniwek Confederacy that were represented were the Moingwena, Chinkoa, Maroa, Espeminkia, Cahokia, Chepoussa and Omouahoa (Temple 1958; Bauxar 1959). The Iliniwek remained at this location for about nine years, and then removed in the winter of 1691-2 to the vicinity of Peoria where Tonti had re-established his fort. The Iliniwek abandoned their large village ostensibly because of the scarcity of firewood and the difficulty of supplying water to the Fort (Pease and Werner 1934:326-7). The new village was known as Pimiteoui or Tonti's fort, to distinguish it from the fort at the Rock with the same name, and the establishment on the Rock was allowed to fall into disrepair.

At the same time the Iliniwek resettled near the Rock, La Salle and Tonti had attracted to the vicinity several friendly tribes who had hitherto little connection with the area. A great number of the Miami, which included the Wea, the Piankeshaw, and the four sub-divisions usually known as the Miami proper, came from the Fox River in Wisconsin and the Galena River region in Illinois. The Miami seem to have been located more distant from the Rock according to information of the Franquelin maps of 1684 (Griffin 1943, Map 8) and 1688 (Tucker 1942 pl. XIB). The Wea, Piankeshaw, and Mengakankia settled to the north of the Illinois River, apparently along the small streams which drain the prairie between Pecumsaugan and Buck Creeks. In this village was possibly a band of Missouri (Emissourites) (Margry 1878-88: 2:204). The Pepicokia settled to the east of the fort probably well up Covel Creek. The Kilatika chose a site a short distance up the Fox River on the east side. The Atchatchakangouen settled near the Kilatika and/or the Kankakee and Iroquois rivers. In 1687-88 there was a Miami village on Buffalo Rock.

Several bands of Shawnee were lured from the country to the east. La Salle mentions by name the Chaskepe, Ouabano, Cisca, and a group specifically called the Shawnee. The locations of the Shawnee villages differ in the two maps of Franquelin. In the map of 1688, which is possibly more accurate than the map of 1684 (Bauxar 1953), the Ouabano and Chaskepe had independent villages on the south side of Illinois River apparently below the Vermilion. The Shawnee proper were represented by 100 families settled on the north side of the Illinois opposite the fort and below the village of the Iliniwek.

There were attached to La Salle's fort several families of Mahicans, or 'Loups', migrants from Massachusetts. This was an Algonkian - speaking band of probably mixed origin. The Miami and Shawnee, and perhaps the Mahicans as well, left the fort and the general region as well in 1688 and 1689.

By 1700 the Kaskaskia had abandoned the Pimiteoui villages and Illinois River, and the French were no longer established at Fort Pimiteoui. Now only a part of the Peoria who had remained were the dominant Iliniwek tribe in the Illinois Valley, and they drifted back to the region about the Rock to establish settlements on the islands and along the north shore of the river. The rock briefly regained political importance when Pierre Deliette was appointed commandant of the Illinois Country in 1714 and returned to the Rock. But with the passing of the Illinois Country from the jurisdiction of Canada to Louisiana in 1718, the post at the Rock was permanently abandoned.

The Peoria were soon (1722) driven from the upper Illinois by the Sauk and Fox, but their successors apparently never established a settlement in the region. A decade later the Peoria began to drift back into the region and remained in possession of it until their final expulsion in 1769, when the incident took place which gave to the Rock its present name, Starved Rock. The Potawatomi and Kickapoo subsequently came into possession of the Starved Rock

region, but there is no record of a village belonging to either of these tribes in the immediate vicinity of the Rock.

From a review of the history of the Starved Rock region, it is apparent that the regional population was much denser before the abandonment of Fort St. Louis than it was afterwards. As a result of the marked

population decline, evidence of occupation prior to the abandonment of Fort St. Louis is more likely to appear; and though there were many tribes living in the area of the Rock, various bands of Illiniwek, particularly the Kaskaskia, were the most numerous and persistent occupants of the area until the late eighteenth century.

CHAPTER II

THE LOCATION OF THE GRAND VILLAGE OF THE KASKASKIA

Previous Claims

Parkman (1879) advanced the first serious claim for the location of the Grand Village of the Kaskaskia. He believed that this village was located at the site known as the Utica Mound Group (Orr 1948), which straddles the northern approach to the Utica bridge across the Illinois (Kelley and Cole 1931). Other scholars such as Sauer (Sauer, Cady and Cowles 1918) have accepted his identification, although it was made prior to any knowledge of archaeological chronology and without the acknowledgement of distances mentioned in the French accounts. When Dr. A. R. Kelly dug at this site he found a predominately Hopewellian occupation. Only in a few intrusive situations was there any indication of later artifacts and these seem to represent several occupations. Late Woodland and Heally sherds (Langford and "Fisher") were found in several areas (Henriksen 1957) and early historic burial goods were encountered in at least one instance. One burial (No. 42) had copper wire hair coils that may have been the same type as those found at the Zimmerman site (see Fig. 20g) (Hodges 1929b:39). Unfortunately, these trade goods, as well as others reported from the vicinity (Hodges 1929a, 1929b; Kinietz 1933: 71-2) have disappeared and an inventory is not available. But the important fact is that the occurrence of early trade goods at the Utica site is restricted to grave goods and the amount is relatively insignificant compared to that found at the Zimmerman, Starved Rock, and Hotel Plaza sites (Orr 1949b; Hagen n.d.). Hence, the artifacts found so far on the Utica Mound site hardly constitute a good argument for this site being the location of the Grand Village of the Kaskaskia.

*The Historic Evidence**

There is a variety of information pertaining to the location of the Grand Village of the Kaskaskia pertaining mostly, but not entirely, to the village that existed before September, 1680. Some descriptions such as those written by Abbe Bernou for the official report of La Salle's expedition of 1679-1680 are vague. Old Kaskaskia was said to be "situated at 40 degrees of latitude in a somewhat marshy plain and on the right bank of this river [Illinois] (which is) as broad in this place as the Seine before Paris and divided by very beautiful islands" (Margry 1878-1888: 1:466). Father Allouez described the same location for the village existing in 1677. According to him "the spot which they have chosen for their abode is situated in latitude 40 degrees 41 minutes. On one side of it is a long stretch of prairie, and on the other a multitude of swamps, which are unhealthy and often covered with fog, giving rise to frequent peals of thunder;" (Thwaites 1896-1901: 60:161).

However, certain physical features on this stretch of the Illinois River have made it possible to reconstruct more precisely the village's location. One feature is the occurrence of two rapids in the Illinois River, prior to the construction of the present day locks. The larger rapids was at Marseilles, and the lesser was at the foot of Starved Rock. The other feature is Starved Rock itself.

La Salle clearly implied that Old Kaskaskia lay between the two rapids when on his return to the Illinois Country in December of 1680 he left two men to guard bag-

*This section of the chapter is a condensation of Sara J. Tucker's manuscript, "Preliminary Summary of Data Relating to *Old Kaskaskia* and the Illiniwek Indians for the Period 1670-1700", which is especially valuable for its extensive fresh translation of transcripts recently made of the original documents.

gage on an island that was near Old Kaskaskia and between the two rapids (Anderson 1898:229).

Moreover, La Salle showed its relation to Starved Rock when he said that "The village of the Illinois was on the edge of the river, on the north side. On the south side, there is a great rock, quite high, and steep almost everywhere except where it comes in a slope down to the water's edge, and where it [i.e. the 'place'] is covered with white oaks for about one or two leagues along [the river. (*de long*, perhaps 'in length')]; at a hundred paces from there is a great field [*campagne*] which extends quite far to the south and which is washed by the Aramoni River [the Big Vermilion] which goes to join the Illinois River (from which it is separated by three leagues in this place) a little more than two leagues below the village, and which is bordered all along with a strip of forest, not wide." (Paris, B.N.Mss. Clair; 1016: 53-64v.; Margry 1878-88: 2:117-124).

The village prior to the Iroquois attack of 1680 extended far along the north bank of the Illinois. According to La Salle, it was a large "village, which was a quarter of a league in width [about .7 miles] without any enclosure or entrenchment, and which was composed only of mat-covered cabins extending along the river, whose shore it occupied for about a league [about 2.7 miles]" (Margry 1878-88: 2:128).

After the construction of Fort St. Louis, La Salle wrote a letter, the beginning of which has been lost. In it he describes in greater detail the distances between recognizable points along the river and gives better details of relationships between those points and both Old Kaskaskia and Fort St. Louis. According to the Library of Congress transcription he says, "[following Margry 1878-88, 2:174, L.C.Tr. "en passant"] on Teatiki [Kankakee River] from the confluence of the Checagou [Des Plaines River], one finds for about nine leagues the most beautiful landscape in the world. The savages call it Massane, because of the great quantities of hemp which is there. Nothing can be more beautiful, cut with rivers and with a diversity of meadows [*prairies*],

islands, clumps of trees, little hills, valleys, fields [*campagnes*] whose land is excellent, and best of all, the river; but, since there is no navigation in the summer, and since even when the waters are high, the rapids which are at the end of these nine leagues [at Marseilles] makes navigation very difficult, I did not wish to establish myself there. Below the rapids, on my left, descending, there is a quantity of iron ore [*pierres de mines*], and in the summer all the stones are covered with saltpeter. There are also many slate quarries [*ardoisieres*] and [much] pit coal. Four leagues further down, on the right, one finds the Pestegonki [Fox] River

Two leagues further down is the former village of Kaskaskia Illinois who abandoned [it] since the rout caused by the Iroquois three years previously. The news of the fort which I had built there brought them there with many other nations. It is situated half a league below the said village, on the left side, descending the river, on the top of a rock which is steep on almost all sides, which it [the river] washes at the foot, so that one can draw water there from the top of the rock, which has about a six-hundred foot circumference

The neighboring rocks are all lower than that one, and the nearest one is two hundred paces away, the other ones being farther. Between them and the Fort Saint-Louis there is a great valley on two sides, which a brook cuts in the middle, and inundates when it rains. On the other side, there is a field [*prairie*] which borders the river, in which, at the foot of the fort, there is a beautiful island cleared at a former time by the Illinois, and where I and my inhabitants have done our sowing within range of the musket from the fort, so that one can defend the workers from inside the fort and prevent enemies from landing on the island. The edge of the rocks which surround the fort, as I have just said, is covered with oaks for a space of three or four *arpents* [one arpent = .85 acre] in area, after which there are vast fields [*campagnes*] of quite good soils [*terras*]. The other side of the river is bordered by a great field [*prairie*] which the Illinois cultivated

formerly. It ends in a hill which extends for some length [*qui regne tout du long*], and whose slope is covered with woods in places and which leaves great openings in other places, through which one sees the fields [*campagnes*] that continue beyond, (we know certainly) for more than four hundred leagues. Two leagues below the fort and on the same side is the river which the Savages call Arameni, not very considerable and quite rapid. There are quite fine slate quarries [*ardoisieres*], and the Savages say they have found copper there several times, without knowing its mine. The Illinois River is, in descending, completely bordered with willow [*bordee de franc-bois*], and the hills which are behind are also covered, so that, nevertheless, the fields are always behind them, and come in places quite close to the river, from which they are scarcely ever more than a league distant. From there down, navigation is always good, and one rarely sees the fields from the water's edge, except perhaps at fifteen leagues or so below the fort, on the right descending, or after having passed the little fort of Chassagoach ten leagues distant." (Paris, B.N., Mss. Clair., 1016:157-162v. in Tucker 1946:14-16; Also in Margry 1878-1888, 12:174f).

A very important point that emerges from this translation is that Fort St. Louis is explicitly located one half league below instead of six leagues below, which is the distance stated in Margry (1878-88 2:175). As a result, all accounts of the village's

location are now consistent and there is no longer any necessity to postulate a shift in location of the village between 1680 and 1682. Some of the confusion which is still retained in the literature (e.g. Temple 1958:26) should be dispelled. The Library of Congress transcription [Paris, B. N. Mss. Clair., 1016:157-162v.] reads "il est situe demis lieue au dessous du village" instead of "six lieues". This error is not the only one that has been noted in Margry (cf. Pease and Werner 1934:x), and fortunately Mrs. Tucker was able to check a transcription that is in the Library of Congress. It was not possible to check the original in Paris when Mrs. Tucker was undertaking ethnohistorical research because World War II was still in progress. However, she felt that since the transcription was made under the direction of Mr. Waldo G. Leland, there could be no question which version was to be considered the more accurate (Tucker 1947).

In detail then, LaSalle reckoned nine leagues from the confluence of the Kankakee and Illinois rivers to the Marseilles rapids; four leagues from the rapids to the Fox River; two leagues from the Fox River to Kaskaskia; one half league from Kaskaskia to Fort St. Louis. This adds up to fifteen and one half leagues between Fort St. Louis and the Kankakee confluence, and coincides closely with his distances recorded in 1680 (see Table 1).

Deliette in a journey down the Illinois in 1693 recorded distances along the route

TABLE 1
A COMPARISON OF MODERN DISTANCES ALONG THE ILLINOIS WITH THE ESTIMATES OF
DELLETTE AND LASALLE
(After Tucker, 1946:19-20)

	Worman (Miles) 1934	Deliette (Leagues) 1688-1702	LaSalle (Leagues) 1680 1683	
Junction of the Kankakee and the Des Plaines Rivers	0	0	0	0
Mazon Creek	10.5	3	—	—
Rapids at Marseilles	26.0	10	—	9
Fox River	33.25	13	—	13
<i>Kaskaskia Village</i>	—	—	15	15
Starved Rock (Ft. St. Louis)	42.0	15	—	15.5
Vermilion River	46.5	—	17+	17.5

Deliette League=ca. 2.8 miles; LaSalle League=ca. 2.7 miles.

that closely coincide with those given by La Salle (Pease and Werner 1934:306-7) and confirm the relation of the pre-1680 Kaskaskia village to Starved Rock and other landmarks on the river.

A comparison of the distances recorded by La Salle and Deliette with modern records in Table I shows how well these records parallel each other. The modern mileage is based on distances recorded on the U. S. Engineers, Worman Series maps of the Illinois and Des Plaines Rivers, Sheets 36 through 43.

There is room for little doubt that the pre-1680 Kaskaskia village lay about 1.35 miles upstream from Starved Rock on the north side of the river and in the area of the Zimmerman site.

Although the presumption is great that the Grand Village of the Kaskaskia of 1683-1691 was located approximately on the site of the pre-1680 village, there are no precise statements in the historical record. The situation is further complicated by the presence around 1687 of a Shawnee village of about 100 families nearby on the same side of the river (Pease and Werner 1934:307).

The Kaskaskia village contemporary with Fort St. Louis is shown on the Franquelin map of 1688 (Tucker 1942: Pl. XIB) as across the river from the Fort and east of a Shawnee village. Without more precise details the locations of either the Iliniwek or the Shawnee villages are ambiguous. However, there is a limited area on the north bank in which to locate a large village. The western limit is just below Utica where vast swamps begin and the eastern limit is Buffalo Rock where a Miami village, undoubtedly the one shown east of the Iliniwek village in Franquelin's map of 1688, is located by Joutel in 1687-88 (Temple 1958:59). Within these limits the land directly opposite the Fort was unoccupied since uncultivated meadow is mentioned in that area in 1683 (see above) so that the stretches of land that are most suitable for occupation are around the Utica and Zimmerman sites.

The Zimmerman site probably represents parts of three historic villages, namely the two Iliniwek villages and the Shawnee village. However, the best documentary evidence obtains for the location of the pre-1680 village, which was solely Iliniwek.

CHAPTER III

THE GEOGRAPHY OF THE ZIMMERMAN SITE

Location

The Zimmerman site (Ls^v13) is known to extend over a mile in length and several hundred yards in width along the north bank of the Illinois River (Fig. 1). The area of excavation extended along the river bank in NW¹/₄, Section 23, Township 33 North, Range 2 East and over into the northeast corner of Section 22. However, the full extent of the site has not been determined, and it is probable that the bank of the river was sporadically occupied during pre-historic and historic times for a distance of nearly two miles on either side of the Zimmerman site.

To the east of the site an Upper Missis-

sippi occupation (Ls^v18) has been found (MacNeish 1945), and to the west one was located at the present dam site when the locks were under construction (Hodges 1929b). Material has also been reported from the Delbridge Islands, but its cultural affiliation is unknown (MacGregor, personal communication).

Geology

The Zimmerman site is located in broad bottomlands that lie between 50-foot cliffs of St. Peter sandstone flanking the river at this point. A good aerial view is illustrated in the frontispiece of Willman and Payne (1942). The site is situated on the Ottawa

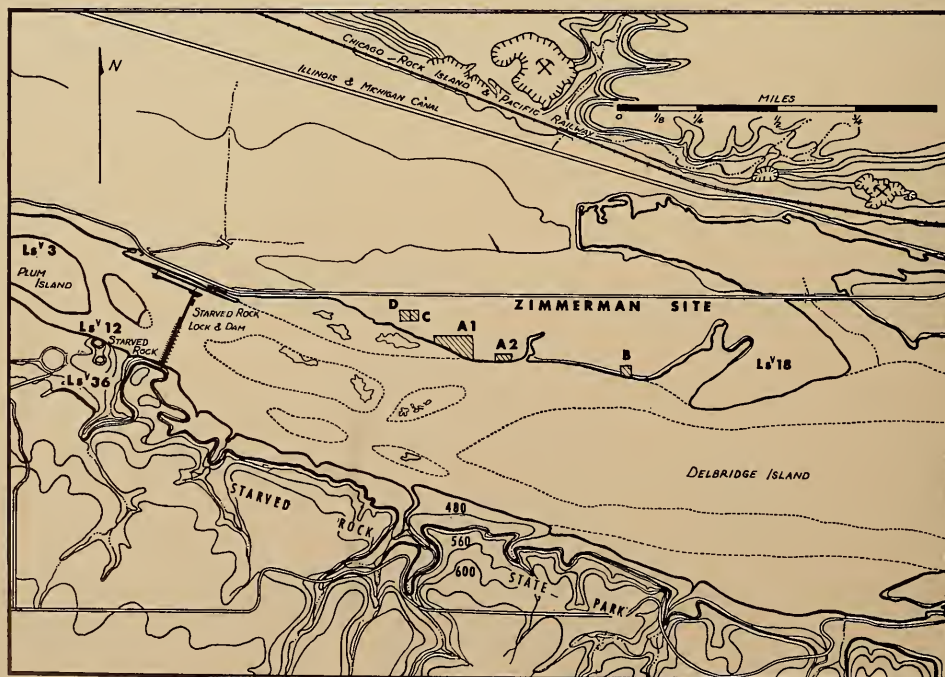


Fig. 1—Map of the Zimmerman Site and the Starved Rock region. Based on the U.S. Army Engineer Map of the Illinois and DesPlaines Rivers, No. 37, 1936.

terrace which occupies a major portion of the bottomland near Starved Rock. The terrace is a late-glacial erosional feature that dates to the Toleston stage of glacial Lake Chicago (Willman and Payne 1942:173). According to Willman and Payne (1942:43), "Although much of the terrace appears to be flat when seen in the field, aerial photographs show that its surface is a network of imbricating channels and it has a topography distinctly different from that of adjacent areas. At many places the terrace is crossed by channels a quarter of a mile to half a mile wide and 5 to 15 feet deep. At times of unusually high water the Illinois River floods these channels." Two abandoned channels exist near the Zimmerman site, one along the south bluff (Sauer 1916:128) and another to the north of the site (Sauer, Cady, and Cowles 1918:43). These channels were formed at the end of Lake Chicago. There has subsequently been relatively little erosion by the river (Willman and Payne 1942:228), so that the Illinois presented essentially the same appearance to the French explorers as it has until recently. In 1930 when navigation locks and a dam were erected at Starved Rock, the water level was raised about 10 feet, thereby drowning several islands near the site and putting the surface of the site itself only four feet above water. Since the erection of the dam, the river has eroded an estimated 15-foot strip along the bank of the site and has cut an exposure throughout its length.

Physical Stratigraphy

The Ottawa terrace is composed of a light brown, sandy residual soil that lies in a thin mantle over St. Peter sandstone (William and Payne 1942). Bedrock was encountered in the excavations between three and four feet below the surface and approximately at the present level of the water.

Environment

The site is situated on a northern extension of more southern forest following the Illinois River bottoms into an area that was

predominately prairie and to a minor extent upland oak forest and savanna. A good description has been presented in the quotation in the previous chapter from La Salle. Within a short radius of the site a number of different natural plant and animal associations could be readily exploited by the Indians. There were, in addition to the opportunities of the river, the thicketed bottomlands, the rolling upland prairies, and the transition between them of the oak-hickory forests (Sauer, Cady, and Cowles 1918:62-3). In the Starved Rock area the great abundance of wild life, both faunal and floral, is attested to in the reports and letters of the early French visitors. Hagen (1952) and Bauxar (1959) have provided useful summaries of the environment and economy of the early historical period in the Illinois country. In a following chapter the contribution of each of the various natural associations to the aboriginal economy will be described.

Geographic Setting

Several geographic factors were probably influential in the particular location of the Zimmerman site: (1) Both the location of the site on one of the few areas of relatively high ground, as well as (2) the ease in exploiting several different environments have already been mentioned. (3) The site was also, according to Allouez (Thwaites 1896-1901:60:161) conveniently located for the observation of any enemy to the Kaskaskia. (4) There was an extensive area on the river banks and islands of sandy soil that is not only fertile but also easily cultivated by aboriginal techniques.

Contrasting with the number of positive factors favoring the location of the site, there is at least one potentially negative factor; that is, the unfavorable location to water travel. The section of the river on which the site is located lies above the Starved Rock rapids which, prior to the construction of the dam and locks, had a steep gradient and a very uneven flow of water. During the late summer when there was hardly a foot of water in most of this part of the river, it was particularly unreli-

able (see La Salle in Margry 1878-1888:2: 174-5; Sauer, Cady, and Cowles 1918). Apparently the importance of water communication was outweighed by other considerations, among them defense. But, perhaps,

it is significant that the Kaskaskia, like many other prairie groups, were said to have made slight use of water travel and preferred instead to travel cross country (Kinietz 1940).

CHAPTER IV

THE EXPLORATION OF THE SITE AND THE DISTRIBUTION OF ITS COMPONENTS

EXCAVATION PROCEDURE

Four areas of the site were explored (Grids A, B, C, and D), each controlled by its own grid system (Figs. 1, 2, and 3) and excavated concurrently. Each grid had its features numbered separately; hence, Feature 10 of Grid A is described as A-10. Features exposed through erosion along the river bank were numbered independently, the feature number being preceded by the symbol Ba, for example Ba-4.

Testing of the site was accomplished through the use of exploratory trenches 2.5 feet wide and the use of an iron probe. Promising areas were expanded into five-foot squares and tied into a grid. Standard controls were used in the extended excavations. Another phase of excavation was the examination of cut banks along the river.

Features along the banks were searched carefully, but few were adequately explored or integrated into the main excavations because the owners feared accelerated erosion, (Orr 1950:45).

STRATIGRAPHY

Although natural stratigraphy is not conspicuous at the Zimmerman site, it has played a key role in the interpretation of the site in this report. A number of important stratigraphic situations were encountered in the excavations. One was the occurrence of occupation zones from one to twelve inches below the plow zone in scattered places in each grid. The zones were clearly observed to overlie pits, middens and houses. Another was the instances of the intrusion of storage and roasting pits

TABLE 2
THE DISTRIBUTION OF THE EXCAVATIONS AND FEATURES OF VARIOUS WORKERS AMONG
DIFFERENT AREAS OF THE ZIMMERMAN SITE

Excavator	AREAS OF THE SITE				
	Grid A Section 1	Grid A Section 2	Grid B	Grid C	Grid D
MacNeish and Wray, 1945		Survey 1, 2		Survey 3?	
Orr and McGregor Summer, 1947	A 1-6, 11, 14, 15, 20, 22, 24-26, 28, 31, 33, 40. Ba 1-4 29	A 12, 13, 21, 23, 29, 32, 34-39, 41 Ba 5.	B 1-8 Ba 6-11	C 1-41	D 1-8 test 1-3
Orr Fall 1947			B 9-17a		
Wray 1947?			Wray 10, 11		
Bluhm and Fenner 1959			Survey no. 4		

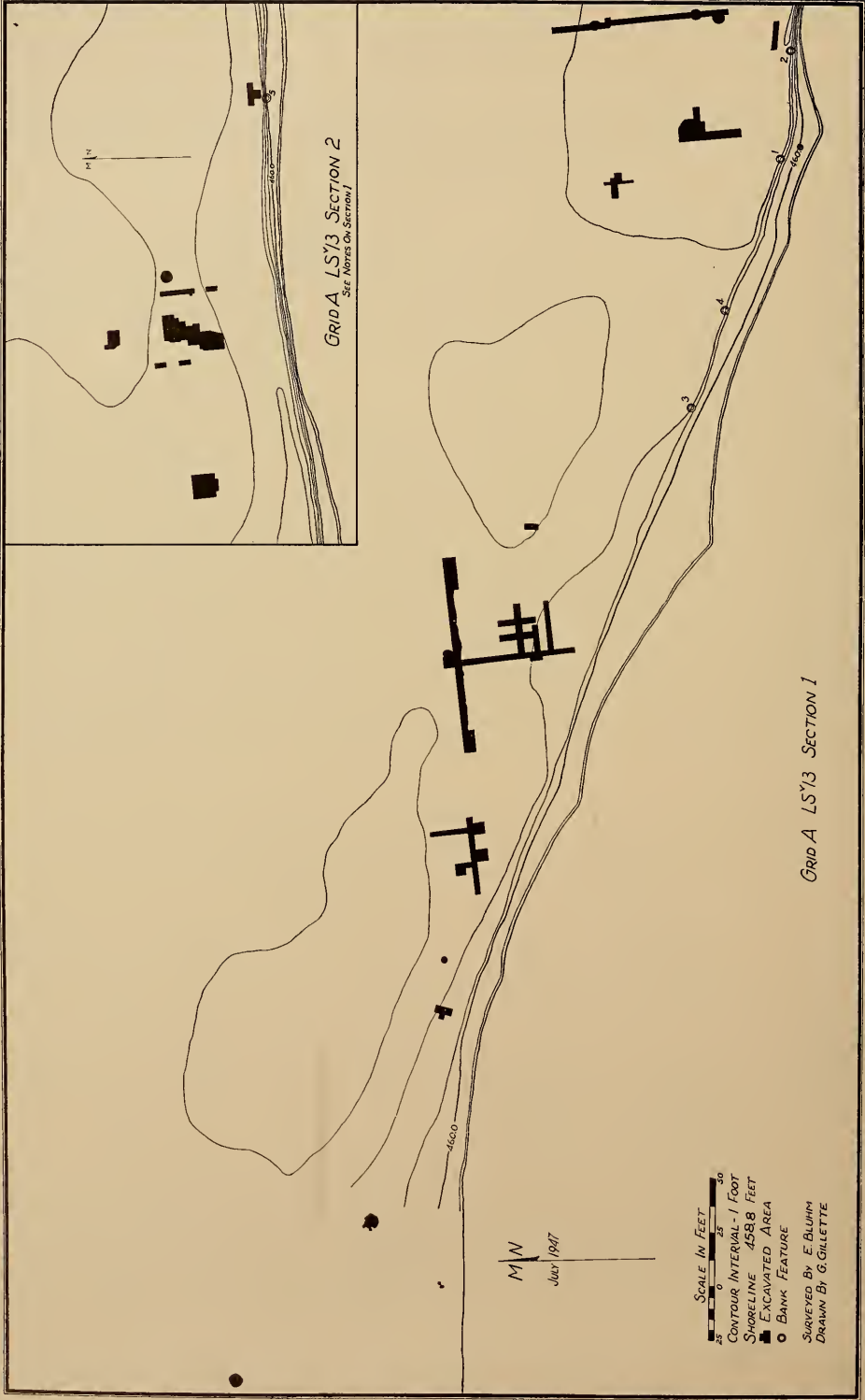


Fig. 2—Map of Sections One and Two of Grid A that correspond to A1 and A2 of Figure 1.

upon other pits. In each instance where the stratigraphy had aided in segregating components and sequences within a component, it is discussed under the relevant component.

For the most part the areal distribution of the various complexes has helped to segregate the components of the site. Orr's (1949a) analysis, which relied chiefly on "horizontal stratigraphy" has been qualified in this report in several important respects. An examination of Table 3, which shows the breakdown of features in each grid into their cultural affiliation, will show to what extent the components coincide with the different areas of the site.

THE COMPONENTS OF THE SITE

There are at least three components at the site and possibly as many as five. Three are associated with European trade goods, and at least one is without an association with trade goods. The three components that are relatively well established are: (1) the Heally component, a prehistoric Upper Mississippi complex; (2) the Swanson component, a probably prehistoric Late or Terminal Woodland complex; and (3) the Danner component, an historic Fort Ancient complex. Each of these components is characterized by different pottery and has tended to occur in three different areas of the site. The two components that are not as well established are (4) the Historic Heally component, a probably historic manifestation of the prehistoric Heally component; and (5) the Zimmerman component, a tenuous, historic Oneota complex. The latter components are based on scanty material and occur mixed with artifacts of the other components.

The Heally Component

The Heally component is a designation for a relatively homogeneous and undoubtedly prehistoric assemblage located mostly in Grids C and D at the west end of the site (Figs. 1, 3). The houses, pits, and middens of Grid C, except for three pits (C-3g, 4, 10), compose the core of this component. In addition, the midden of Grid D and

many pits in Section One of Grid A which contained only sherds of Heally affiliation have been included in the Heally component (see Table 3).

Although little of the natural stratigraphy of Grid C was completely worked out in the field, one important sequence that has been of great usefulness was uncovered overlying house pit C-8. A schematic diagram of the strata will be found in Table 5. A seriation diagram (Fig. 16) has been drawn up that orders sequentially the houses of the Heally component. It uses the data from the sequence overlying house pit C-8 and that from the arbitrary levels of a five-foot square, 20 R 10. This five-foot square had the following stratigraphy below

TABLE 3
COMPONENTS OF THE ZIMMERMAN SITE AND THEIR
ASSOCIATED FEATURES

Heally Component	
A-1, 3, 7, 8, 9, 14, 15, 31.	
Ba-2, 12, 13.	
C-1, 2, 2a, 2b, 3, 3b, 3f, 5, 6, 7, 8, 8a, 9, 11, 12, 13, 14.	
D-1 Wray no. 15.	
Danner Component	
A-12, 13, 21, 23, 25, 29, 32*, 34*, 36*, 37, 38*, 39, 40*, 41.	
Ba-3*, 4*, 5.	
B-10? Survey no., 1, 2* (?)	
Wray no. 1, 2*, 7, 8, 9*.	
Swanson Component	
B-2, 4, 7a, 11, 14.	
Ba-14, 16.	
Zimmerman Component	
A-19*.	
Ba-8, 10.	
Historic Heally Component	
A-4*, 6*, 10*, 11, 16*, 17, 20*, 22*, 27*.	
Ba-1, 6.	
B-1*, 3*, 5*, 6*, 13.	
C-3g*, 4*.	
Survey pit no. 3*(?)	
Wray no. 4, 5*.	

UNCERTAIN AFFILIATION

Features with Material of Mixed Affiliation

Ba-5, 18.
B-7, 8, 9, 10, 12, 15, 17a.
Wray no. 12.

Features Without Material or Other Association

A-5, 18*, 24, 26, 28, 33.
Ba-7, 9, 11, 15, 17, 19 through 29.
C-10
Survey no. 4.
Wray no. 3, 6, 10*, 11, 14.

Note: All features are included except burials.
*Indicates an association with trade goods.

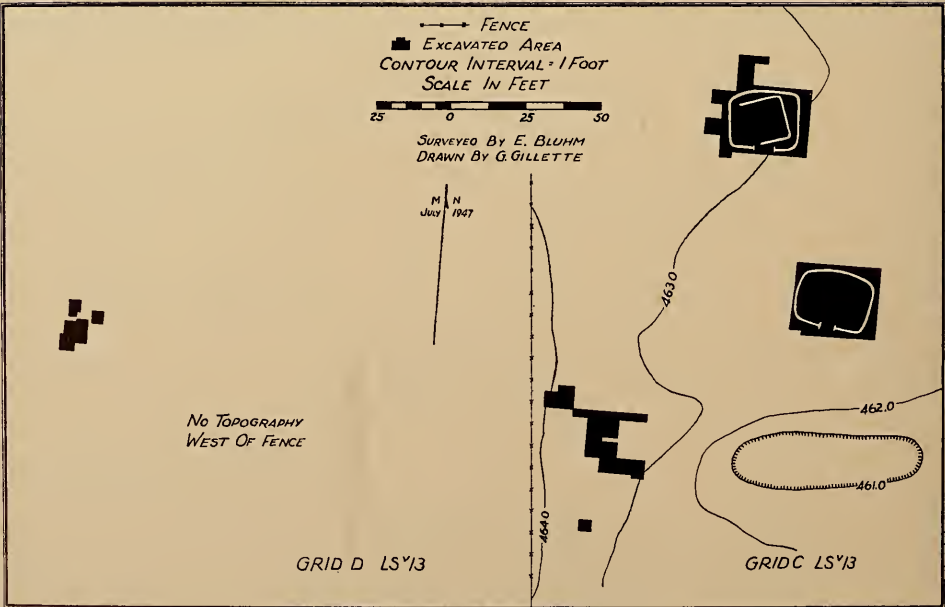


Fig. 3—Map of Grid B, C, and D.

the plow zone. First, there was a humic layer (No. 1) that is the equivalent of the sub-plow occupation zone elsewhere in the Grid; and, second, there was a lighter occupation zone whose organic content appears to have been leached. This lower zone was divided equally into three arbitrary levels (*viz.*, 2A, 2B, and 2C).

The Swanson Component

The Swanson component has been segregated on the basis of a distinctive Late Woodland ceramic complex. It occurs in a highly mixed area of the site, Grid B (see Table 3), in which relatively little adequate work has been undertaken.

Despite what has been written about the chronological position of this component (Orr 1949a), there is no certain evidence that it is historic and associated with trade goods. On the contrary there is stratigraphic evidence that at least part of this component is prehistoric. First, a storage pit, B-4, containing exclusively *Swanson Cordmarked* sherds (e.g. Fig. 13d) was disconformably overlain by an occupation zone in which Danner, Oneota, Langford and Swanson ceramics occurred. Second, a pure Swanson pit (B-7a) was intruded by a pit (B-7) that had a mixed Swanson and Oneota assemblage.

The Danner Component

The Danner component has been isolated and defined on the basis of a distinctive ceramic complex showing Fort Ancient affiliation. It was found with European trade goods in unmixed contexts in Section Two of Grid A. Elsewhere, in Grids B, and probably C, it was found in the most recent strata with trade goods and mixed with other assemblages (see Table 3).

In section two of Grid A, where there is very little known contamination with other complexes (see Table 9), there is an indication of stratigraphy within the Danner component. Two storage pits (A-37, 38) originating 15 inches below the surface were overlain and intruded by a roasting pit (A-34) and a storage pit (A-32) originating 12 inches below the surface (Bauxar 1953: 41). This example of stratigraphy indicates an increment in this area of at least 3 inches during the Danner occupation.

The Historic Heally and Zimmerman Components

These components have been isolated from mixed contexts in the historic period occupation of Grid B and Section One of Grid A at the Zimmerman site. Unfortunately, the cultural evidence for isolating these components is uncertain enough to make these complexes tenuous.

CHAPTER V

STRUCTURES*

HOUSES

The "Double-walled" House (C-3)

Two distinct types of houses were uncovered, both of which belong to the (pre-historic) Heally component. The first is a roughly rectangular house with slightly curved walls and rounded corners. The walls are composed of fairly carefully placed individual posts. The one house of this type that was fully excavated and adequately explored (C-3) was apparently set in a shallow depression. There were two outer rows of posts and an inner row presumably supporting a bench. (Fig. 4). The two concentric outer rows have suggested that this is a double-walled house (Orr and MacGregor, 1947) although it might be questioned if there were actually two walls in simultaneous use (cf. Griffin, 1944; 1946). One of the walls may have been a replacement for the other or, more likely, the inner row may have been a partition and support for the interior bench and/or a roof support. The dimensions of this house were 20 by 25 feet. The entrance was located in the center of the south wall, facing the river. Inside there were two hemispherical or basin-shaped pits (type C?) and one deep pit, extending 28 inches below the floor (type B) (Table 4). The maximum diameters of the pits varied from 15 to 30 inches. Debris was more prevalent in the bench area, indicated in Figure 4, where litter would have been more likely to accumulate. The occupation layer was 5 inches deep. There is no evidence of the type of wall covering. Early French observers of the Illiniwek at Kaskaskia described a mat-covered and "barrel-shaped"

lodge (Bauxar, 1959 and see Chapter II) which could have referred to a house shaped like C-3 (Orr, 1947c). However the barrel or arbor-shaped (*lit. berceau*; Tucker, 1946) house is much closer to the wigwam, a structure of light construction, used by prairie tribes such as the Winnebago and Kickapoo (Radin, 1923; Ritzen-thaler and Peterson, 1956). A much better candidate for an archaeological version of the "barrel-shaped" lodge or wigwam was found at the Anker site (Liss and Bluhm, 1958; Caldwell, 1959, Fig. 7).

The Wall-trench Pit House (C-8/31)

The other house type is a rectangular, square-cornered pit house with wall trenches (Figs. 5, 6). Two of these were uncovered, one above the other, each about 20 feet square. House C-13 was built in the pit used by C-8 after the pit had partly filled in. The depth of the original pit was about 12 to 18 inches below the original ground surface. The earlier and larger of the two houses (C-8) had a doorway on the south; the later and smaller (C-13) had one on the west. The entrance of C-8, which was indicated by a ramp sloping down from the entrance, was in the center of one side. The number of posts to the right of the entrance and the absence of pits suggests that a bench 4.5 feet wide stretched across that side of the house. Evidence of which house was earlier is provided by the intrusion of C-13 post holes into the ramp of C-8. Both houses were apparently destroyed by fire; charcoal was found outlining many of the postholes. The wall trenches of both houses extended 6 to 8 inches below the lower floor, and the walls seem to have been stoutly built, perhaps to withstand the great weight of an earth or sod covering. Evidence of such stout construction is provided by the find-

*This Chapter is based principally on a paper entitled "Structures at Ls^v13 and Ls^v12" by Dr. Elaine A. Bluhm, with additions from Bauxar (1953) and notes in the Illinois State Museum.

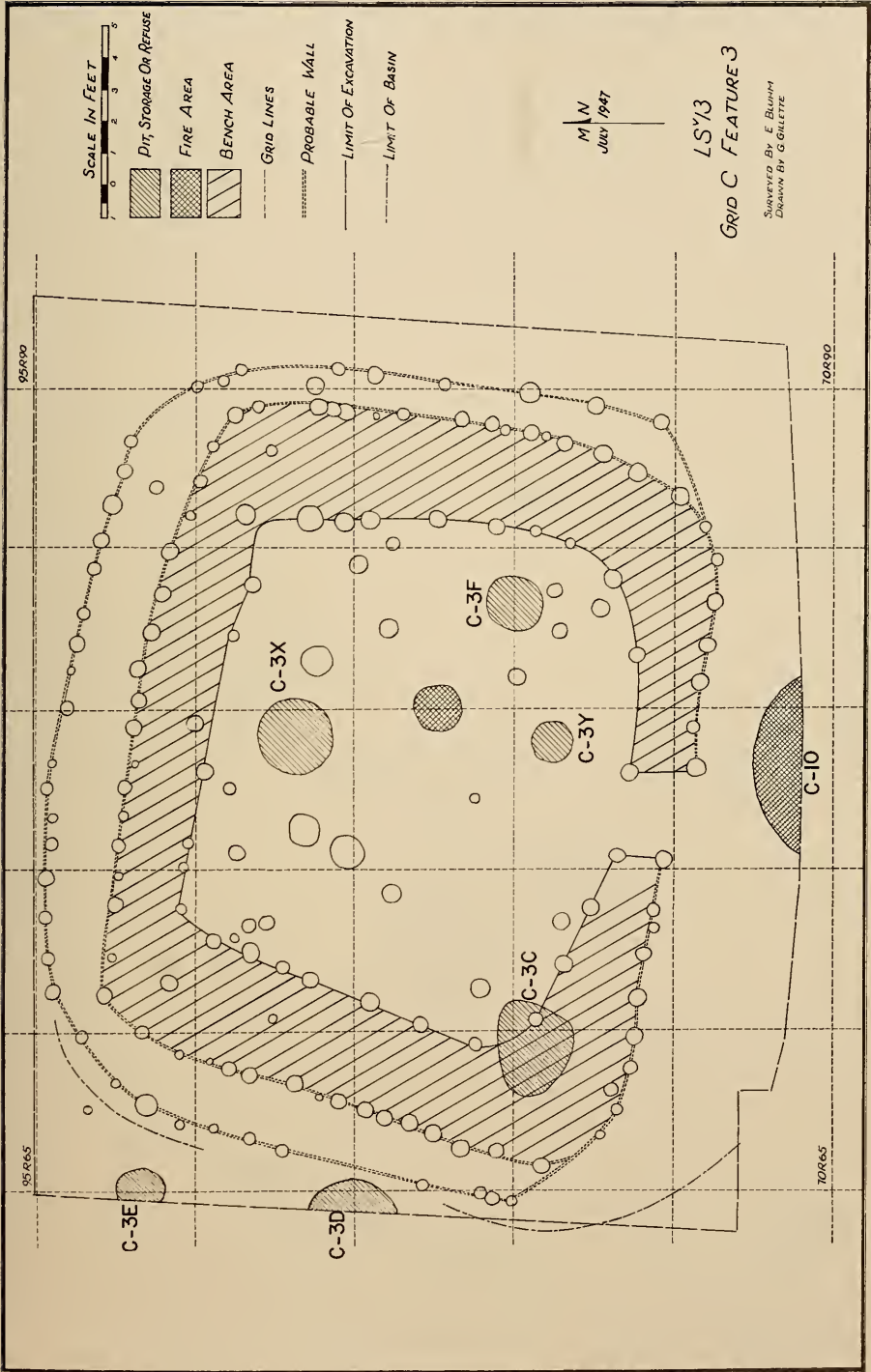


Fig. 4—Floor plan of house C-3.

ing of an unburnt heart-wood piece of hornbeam (*Carpinus caroliniana*, Walt.) in one of the smaller post holes in the north wall of C-8. This fragment, estimated to have been from a log 4 inches in diameter, is of a wood that is exceptionally close-grained, stout, and durable (Burcaw, 1947). One of the cache pits was type B, and three were probably type D (Table 4). The fireplaces were shallow basins of ash, and the position of the largest one indicated that the occupation built up 8 inches from the floor. Unfortunately, it was not possible

to separate the fills of the two different houses.

The presence of more marked fire pit areas in the wall trench house as against less well-marked similar areas in the "double-walled" house may indicate that one was used in the winter and the other in the summer. However, the difference could just as easily reflect the slight temporal difference between the two house types (see Fig. 16).

Both types bear a partial resemblance to the two excavated houses at the closely

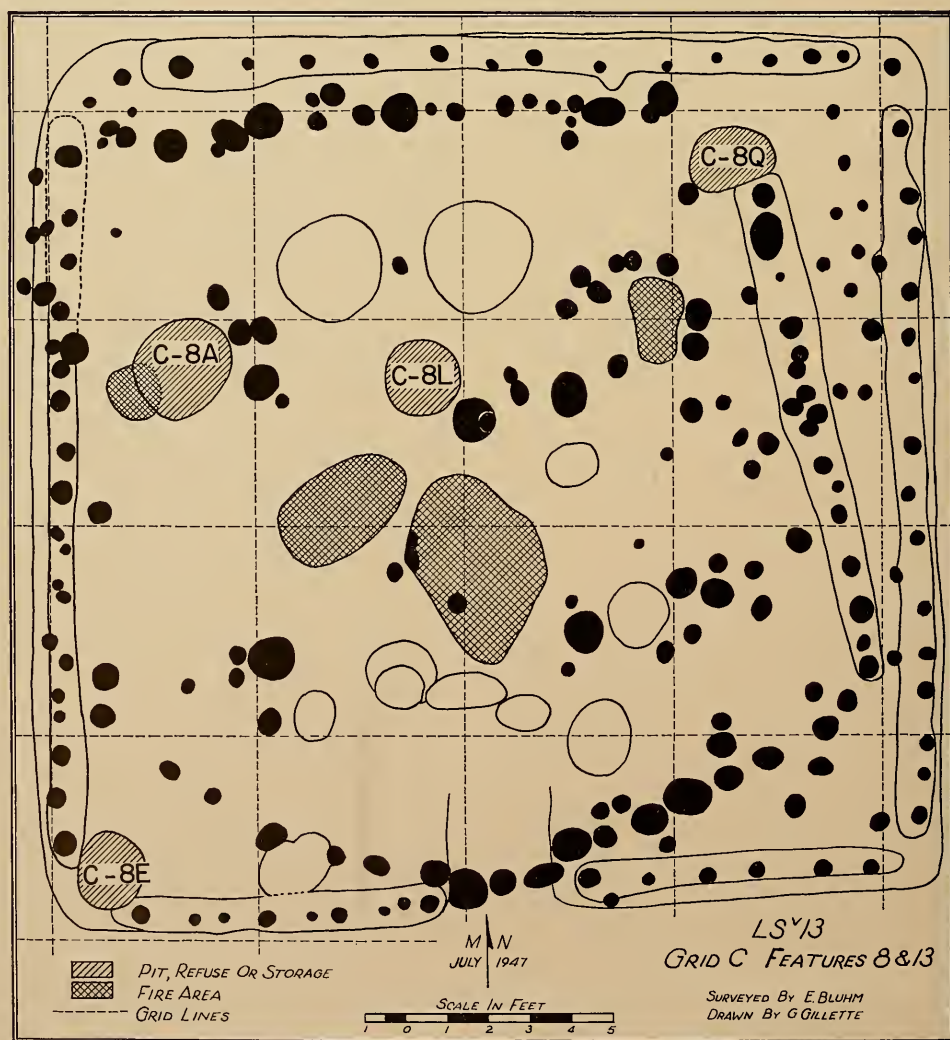


Fig. 5—Floor plan of houses C-8 and C-13; at depth of 30 inches below the surface; lower left stake is 130R40, upper right stake is 150R60; unshaded pits are shallow basins.

related Fisher site (Wi^v6) (Griffin, 1944; Horner, 1947). The first type shares the "double-walled" pattern with the Fisher houses; and the second type shares the semi-subterranean and wall trench construction. The houses at the Fisher site seem to belong to Periods B and possibly C, which are somewhat later than the Heally houses at the Zimmerman site. The semi-subterranean houses are in every case prehistoric and contrast with the construction of the mat-covered wigwams of the Grand Village of the Kaskaskia.

Possible Houses

Other structures were encountered in the excavations, but were not so readily distinguishable. In one area (C-14) a large number of post holes seem to belong to at least four superimposed houses. Although Bauxar (1953) has tried to resolve this puzzle, the number and types of construction of the houses cannot be settled on the basis of the available evidence. At least, they do not appear to have been of wall trench construction.

In Grid A a less substantial structure was suggested by the occurrence of an oval sand floor (A-31) measuring 9.5 by 6 feet and

five associated post holes 2.5 inches in diameter. Another house floor was indicated by a well delimited, hardpacked occupation level, and a possible house was indicated by two adjacent features (Ba-2, A-7) that were only partially excavated. Presumably it was the northernmost corner of a house that had been washed away since the profile in the bank showed a pit 9 feet across at the top extending 21 inches from the plane of origin. Adjacent to this possible house was a section of a straight wall that probably represented a section of still another house. All these possible houses probably belong to the Heally component.

ROCKPILES

These were concentrations of large granitic rocks on what was probably the original ground surface (Fig. 7). Little refuse and no charcoal was associated with these features. Of the three that were excavated two (A-12, A-5) were roughly circular, and a third was roughly star-shaped (A-3). One of the circular piles, A-12, was constructed of more uniformly sized granite rocks, mostly 7 to 8 inches in diameter, except for a ring of smaller stones within the

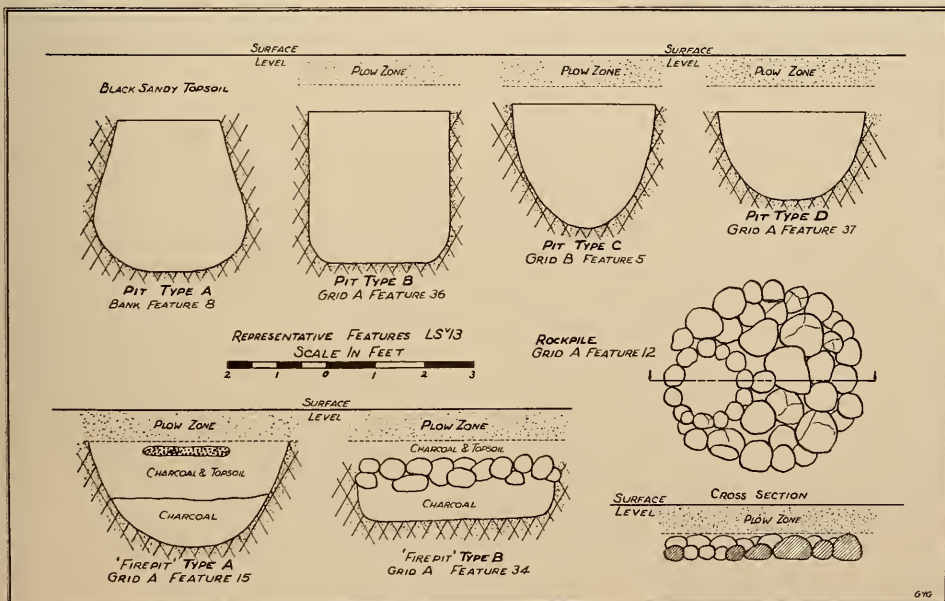
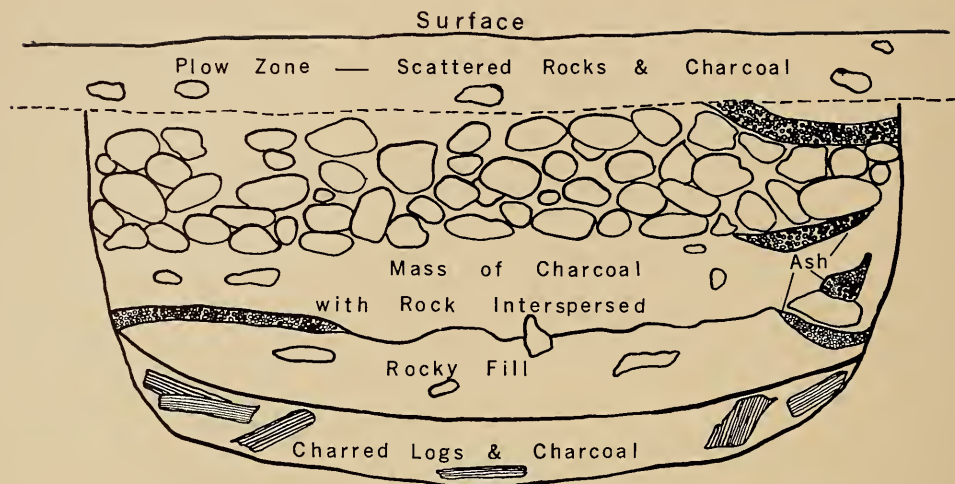


Fig 6—



MACOPIN (?) ROASTING PIT, FEATURE 33, GRID A.

1 Foot

Fig. 7—

southwestern periphery of the feature. The other circular pile, A-5, was less complete, consisting of a more or less solid near-circular or rectanguloid outline of rocks which averaged about 8 inches in diameter except for a number of smaller rocks in the middle. A circular, cleared space seems to have obtained at the southwestern edge as in A-12. The third pile, star-shaped A-13, was a mass of rocks of varying size and indiscriminately arranged. It had a maximum spread of about 45 inches and a cleared space in the center of about six inches in diameter. The rocks in each feature were cracked *in situ* by a rapid change in temperature. While there is no definite explanation for these rock piles, the suggestion that they were part of sweat lodges, surrounded by temporary structures of small poles, no trace of which would remain, seems most plausible in view of the

ethnological information of this area (cf. Jones, 1925; Radin, 1923). The occurrence of numerous rodent burrows, presumably caused by the interest of rodents in the salty earth is supporting evidence. On the other hand, the obviously ordered arrangement of these piles presents complications because they cannot have been arranged in one operation, which is the easiest interpretation, and still satisfy our ethnohistorical information. It seems that heated rocks were brought into the sweat lodge at occasional intervals determined by the density of the steam within the lodge (Bauxar, 1953; 29)

One of the circular rock piles (A-5) cannot be assigned, although an affiliation with the Heally component is possible; the other two piles were found in the Danner area (Section 2, Grid A) and probably belong to that component.

CHAPTER VI

PITS AND MIDDENS*

Storage Pits

Four types of storage pits were recognized at the Zimmerman site, all of which contained some refuse (Fig. 7). Three of the types consisted of relatively deep pits and one consisted of shallow pits.

Storage pit type A, of which 12 examples were uncovered and seven excavated, is a deep pit with undercut sides. This type has been consistently associated at this site with trade goods or ceramics elsewhere associated with trade goods. Two pits (A-10, A-19), which were the only examples of this type that had a discernable plane of origin, were 26 to 48 inches deep. The minimum diameter of this type ranges from 24 to 26 inches. The maximum diameter ranges from 42 to 38 inches.

Storage pit type B, of which there are over 13 excavated examples, is a deep, straight-sided or cylindrical pit whose walls curve in only slightly to meet the flat or slightly rounded bottom. Two pits of this type whose plane of origin is known are 36 to 28 inches deep. The range of depths below the surface is from 27 to 50 inches. The diameter of the circular openings ranges from 30 to 48 inches. There are probably at least two Heally pits of this type in Grid C, where it is not easy to distinguish the shape of pits, and one in Grid A. Five Danner, two Swanson, and four Historic Heally pits of this type are known.

Storage pit type C has an elliptical or circular opening and sides that slope inward toward a rounded bottom. Pits of known depths are 24 to 48 inches deep, and 32 to 33 inches in diameter. Four of this type can be attributed to the Heally

component. There are also three Danner, two Swanson, and one Historic Heally pit of this type.

Storage pit type D is a shallow type pit whose validity is based on five pits originating below the plow line. Eight of these were excavated and are roughly circular and basin-shaped. They are wider and shallower than type C. Four pits whose level of origin is known, range in depth from 12 to 19 inches. The diameter ranges from 32 to 48 inches. Four Heally examples from Grid C and three Danner examples are known. This pit type has been grouped with other storage pits despite the fact that its shallow depth would seem to preclude that function. It is quite likely that many of these pits had a different use than the other pits. Hall (1960: 31) has pointed out that pits of the same size of from 2 to 3 feet in diameter and 6 to 18 inches in depth have been used in the nineteenth century as wild rice hulling pits (Jenks, 1900:1067).

Although the undercut type pit (A) appears to occur only in the historic period at Zimmerman, it does not replace all of the other pits. There is one instance where an undercut pit with trade goods (B-1) is intruded by a shallow D-type pit (B-6), also with trade goods.

Corn Roasting Pits

Four storage pits have been found that had a solid layer of charred corn kernels, lining the bottom. The kernels were apparently burned in the pits since soil underlying the charred layer has been fired red. Corn cobs rarely occur in these layers which are often several inches thick. Every example that has so far been uncovered is located in or near Grid B (B-7, 13, Ba-11, Survey pit 4, Wray No. 11). Pottery was found associated with two pits (B-7, B-13)

*This chapter is based principally on a paper entitled "Structures at Ls^v13 and Ls^v12" by Dr. Elaine A. Bluhm, with additions from Bauxar (1953) and notes in the Illinois State Museum.

TABLE 4
DISTRIBUTION OF FEATURES AMONG THE STORAGE AND
ROASTING PIT TYPES

Storage pit type A	
A-10*, 19*.	
B-1*, 15.	
Ba-6, 7a, 7b, 8.	
Survey no. 1, 2*, 3*, 4.	
Storage pit type B	
A-8, 11, 16*, 20*, 21, 22*, 29, 32*, 36*, 39.	
B-3*, 9, 11, 12, 13, 14.	
C-3x, 8a.	
Ba-17.	
Storage pit type C	
A-1, 2, 3, 4*, 6*.	
B-4, 5*, 7.	
C-3c?, 3f?	
Ba-9, 12, 13, 14, 15, 24.	
Storage pit type D	
A-17, 37, 38*, 40*.	
B-6*.	
C-3g*, 8e?, 8l?, 8q?, 9.	
Ba-1, 3*, 10?, 16, 18, 22, 26, 27, 29, 30.	
Roasting pit type A	
A-15.	
Roasting pit type B	
A-21, 24, 33, 34*, 41.	
C-4?, 10.	
B-5, 7, 11?, 19, 20, 21, 25.	

*Indicates an association with trade goods.

and is mainly a mixture of *Swanson Cordmarked* and a shell-tempered Oneota-like pottery. An example of the latter, a rim sherd illustrated in Figure 15C, came from the bottom of pit B-7. Elsewhere in Grid B such distinctive sherds are associated with trade goods and Danner pottery. If the occurrence of Oneota-like pottery provides a maximum limit to the age of the pit, it would appear that despite the lack of trade goods in association with pit B-7, this pit is of historic or protohistoric date. This tentative date for the practice of roasting corn in pits is confirmed by the shapes of pits. Two are cylindrical (type B) one is hemispherical (type C) and one recently discovered (Survey No. 4) is of the undercut (A) type which seems to date from the historic period.

Roasting Pits

Many pits were found filled with charcoal, ash, and fire-cracked rock. Although they have been termed fire pits (Fig. 7), only two (A-34, Ba-5) had specific indica-

tions of having had a fire *in situ*. Others showed definite evidence that there had not been an active fire in the pits (Bauxar, 1953:24). None of these pits had trade material directly associated with them. The pits are divided into two types.

Roasting pit type A, consisting of one example (Fig. 7), had a roughly circular opening and a round bottom. It was about 42 inches in diameter and 26 inches deep, and was filled with burned sand, ash, and charcoal. Fire-fractured rock was found in the bottom.

Roasting pit type B is very similar to type A in shape, but contains in addition to the charcoal, ash, and burned earth, many large, granitic rocks (that were apparently cracked *in situ*) at the top of the pit (Fig. 7). These pits have a circular opening that varies in diameter from 42 to 72 inches. They range in depth from 12 to 30 inches. Of the thirteen examples known, six were observed in the bank and were not excavated. There were four altogether that can be assigned to the Danner component. In Grid C, where perhaps two were found, they intruded into the sub-plow occupation zone from the plow zone and are the latest features in that grid. Most of the roasting pits seem to date to the historic period.

Of the type B roasting pits two (A-21, A-33) were unusually complex. At the bottom of one (A-33, Fig. 8) was a 4-inch deposit of charred logs and charcoal; above that was about 6 inches of charcoal and rocks, and last a 10-inch-thick mass of rocks with ash and charcoal reaching to the plow line. Most of the lower layer rocks were greatly splintered by heat. This pit contained no cultural material; the other pit, which was deep and funnel-shaped contained one *Danner Cordmarked* sherd.

These two pits resemble the descriptions of the macopin roasting pits recorded for the Iliniwek by Deliette and La Salle.

"Sometimes three or four cabins combine and dig a hole in the ground five or six feet deep and ten or twelve square. They throw a great deal of wood into it, which they set on fire, and when it is aflame they throw in a number of rocks, which they

take care to turn over with big levers until they are all red; then they go in quest of a large quantity of grass which they get at the bottom of the water and which they spread as well as they can over these rocks to the thickness of about a foot, after which they throw on many buckets of water, and then as fast as they can each cabin puts its (*macopin*) roots* in place, covering them over with dry grass and bark and finally earth." (Deliette, in Pease and Werner, 1934:346).

"They make a hole in the earth where they put a bed of rocks reddened in the fire, then one of leaves, one of *macopin*, one of reddened rocks and so on up to the top, which they cover with earth and leave their roots inside to sweat for two or three days, after which they boil them and eat them alone or with oil." (La Salle, in Margry 1878-88:2).

These roasting pits, however, have been described as rectangular, and at least some were larger and deeper than even the largest pit excavated, A-33, which was 6 feet deep. The stratigraphy in the last named pit very nearly approximates the situation one would expect during the process of roast-

ing, but the apparently undisturbed nature of the several layers suggests either that the food stuff was not removed or that the pit served some other purpose.

However, despite the imperfection in the evidence, the occurrence of layers of cracked rock, ash, and earth in all of the so-called fire pits suggest that their function was that of roasting pits rather than true fire pits.

Middens

Two middens were found which contained an abundance of village refuse, especially shellfish. Both are Heally. One (C-8b) was a large heap of refuse which had apparently been thrown into the pit remaining after the destruction and partial filling of the wall trench houses (C-8/13). This pit was presumably a convenient place to throw refuse and the accumulation filled approximately one third of the area of the pit. The other midden (D-1) was roughly circular in shape and perhaps 60 feet in diameter. It was about 1.5 feet thick in the center and the deposit decreased toward the periphery.

The middens appear to date to a relatively late period in the Heally Complex. Midden C-8b fits in the upper part of the cultural sequence in Grid C (Fig. 16) and midden D-1, which yielded only 8 *Langford Plain* sherds, seems to date to the same period.

*According to Dr. Glen S. Winterringer, Curator of Botany, Illinois State Museum, the root described by Deliette does not belong to the species, *Ipomoea pandurata* (L.) Meyer, a member of the morning glory family that is called by the name "macoupin" today. Instead his description, which is botanically confused, probably refers to the American or yellow lotus, *Nelumbo lutea* (Willd.) pers., although more than one species may have been actually prepared in an identical manner.

CHAPTER VII

POTTERY

POTTERY CLASSIFICATION

The pottery classification of this report is an expansion of a preliminary report by Howard and Gillette (1947) that was made after the summer expedition of 1947. It was a short study that concentrated on the analysis of 395 decorated body and rim sherds out of a total of 9,747 sherds. Thirteen categories were established and used as the working types in the analysis of the squares, levels, and features.

Subsequent to their study various parts of the ceramic collections from the site have been excavated by others. Chief among them was Keller (1947), who analyzed the Fort Ancient material from both the Zimmerman site and Starved Rock. Other aspects have been studied by Lee (1947), Wenner (1947b), and Bauxar (1953), and the editor, himself, has checked some of the previous analyses. The classification, hence, represents the effort of a number of workers, but the form of the present expanded report is the responsibility of the editor.

Four of the categories have been previously named and are comparatively well known; six are new, and three are of uncertain status.

POTTERY OF THE HEALLY COMPLEX

CATEGORY A—LANGFORD PLAIN (not illustrated)

TYPE MATERIAL

From the Fisher site (Wi*6), Periods B and C (Griffin, 1946; 1948).

PASTE

Method of Manufacture—Probably paddle and anvil. Anvil marks present on the inside. Fracture is slightly irregular.

Temper—Fine to coarse, black, angular grit; usually moderately abundant, but occurs both scarce and abundant. (sometimes some mica)

Texture—Compact to coarse, sometimes laminated. Surfaces, especially the interior, often feel sandy.

Hardness—Average is 2.5.

Color—Inside, outside, and core is usually the same: the range is from buff through red to black. A dirty orange or gray-white is frequently found.

Thickness—0.16 to 0.31 inches. Usually 0.16 inch at body, 0.23 inch at shoulder and 0.20 inch at lip. Some rims thinned to 0.08 inch.

SURFACE FINISH

Smoothed thoroughly over cordmarking. In some cases there are brush marks.

DECORATION

None on exterior, two sherds known with fugitive red (?) interiors.

FORM

Rim—Vertical to outflaring.

Lip—Usually flat and outsloping but occurs flat and insloping, and rounded.

Crenelations, notching with a dowel, and incisions occur (Figs. 9E, 10J).

Body—Mostly olla, but some jar forms.

Many have a definite shoulder.

Base—Rounded.

APPENDAGES

Lugs are found that are extrusions of the lip (Fig. 10i); there are double projections built up on the lip that often have punctates on the interior (Fig. 10c,h). One pseudo handle came from the occupation of house C-8/13, Zimmerman site (Fig. 10k); however, small loop handles which occur occasionally at the Fisher and Gentleman Farm sites are absent.

DISTRIBUTION

Known from Plum Island, (Kelly and Cole 1931; Fenner, n. d.); Gentleman Farm (Barth and Willis, n. d.); Fisher (Griffin 1948); Kankakee Refuse Heap (Langford 1919; n. d.); Oakwood Mound (Skinner 1953); Robinson Reserve (Fowler 1952); and Starved Rock (Orr 1949).

TIME RANGE

Probably extends from early Trappist to historic times.

SYNONYMY

This type was named by John Griffin (1946, 1948) in honor of George Langford, the initial excavator of the Fisher site, (Langford, 1919, 1927, 1928, 1930; Griffin, J. B., 1943: 267-284). It has been called "Fisher", "Fisher, grit tempered", and Heally grit tempered (Orr 1949a, 1949b, 1950). However, it is quite apparent that this type is identical in almost all respects to *Langford Plain* of the Fisher Site (Bauxar, 1953; Wenner, 1947b). This type at the Fisher Site occurs with a few variations (e.g. handles) not found at the Zimmerman Site. In only a few respects which are essentially variations does this type at the Fisher Site differ from that from the Zimmerman Site.

**CATEGORY B—LANGFORD TRAILED
(PLAIN SURFACE) (Figs. 8, A, C; 9;
10A-D)**

TYPE MATERIAL

From the Fisher Site (Wi^v6), Period B (Griffin, 1946; 1948).

PASTE

Method of Manufacture—Probably paddle and anvil. Anvil marks are present on the inside. Fracture is slightly irregular.

Temper—Fine to coarse, black, angular grit; usually moderately abundant, but occurs both scarce and abundant. (sometimes some mica)

Texture—Compact to coarse, sometimes laminated. Surfaces especially the interior, often feel sandy.

Hardness—Average is 2.5.

Color—Inside, outside, and core is usually homogeneous: the range is from buff through red to black. A dirty orange or gray-white is frequently found.

Thickness—0.16 to 0.31 inches. Usually 0.16 inch at body, 0.23 inch at shoulder and 0.20 inch at lip. Some rims thinned to 0.08 inch.

SURFACE FINISH

Smoothed thoroughly over cordmarking.

DECORATION

Technique—Thin (0.04 inch or 1 mm.) to wide (0.20 inch or 5 mm.) trailing. Sometimes a stick and sometimes an antler tine were used.

Area—Only between the neck and shoulder.

Design—A very characteristic design is a series of two, three, or four undulating parallel lines forming a meander (Fig. 9b, i). In some cases only the center undulating line is continuous, the outside lines appearing as parallel lines broken above the peaks and below the depressions of the center line. Nested arches are very common (Fig. 8, A, c). Festoons are not known at the Zimmerman and Gentleman Farm sites. For each of these designs, which are essentially curvilinear, there are a few rectilinear equivalents. Reed punctates in a few cases occur between the lines of trailing or in rows just outside and parallel to the lines (Fig. 10, b-d). There are only two examples in which these punctates seem to occur placed indiscriminately. An aberrant sherd was found in Ba-2 that is jar-shaped and decorated with groups of 8 to 10 fine incised lines reaching fan-like from the neck to shoulder (Fig. 10A). This is apparently the influence of Oneota design.

FORM

Rim—Vertical to outflaring.

Lip—Usually flat and outslipping but occurs flat and insloping, and rounded. Crenelations, notching with a dowel, and incisions occur.



Fig. 8—Restored pots from the Wray Collection. A, *Langford Trailed* pot decorated with five groups of two nested, trailed chevrons. There is slight lobing of the shoulder of the pot at the ends of the chevrons; B, a plain shell tempered Oneota-like pot decorated with numerous groups of incised tripods. This decoration occurs on the shoulder and the base. The lip is notched and the strap handles are incised with two vertical lines; C, *Langford Trailed* pot with six groups of three and four nested, trailed lines between the neck and the shoulder. Two bifurcated lugs are attached to the lip. This vessel was associated with Burial 21; D, *Danner Cordmarked* pot with applique nodes that may be atrophied handles placed around the neck. This was from Wray pit No. 1; E, *Healy Trailed* (?) pot that is like *Fisher Trailed* in the use of festoons and the elaborate quality of the design.

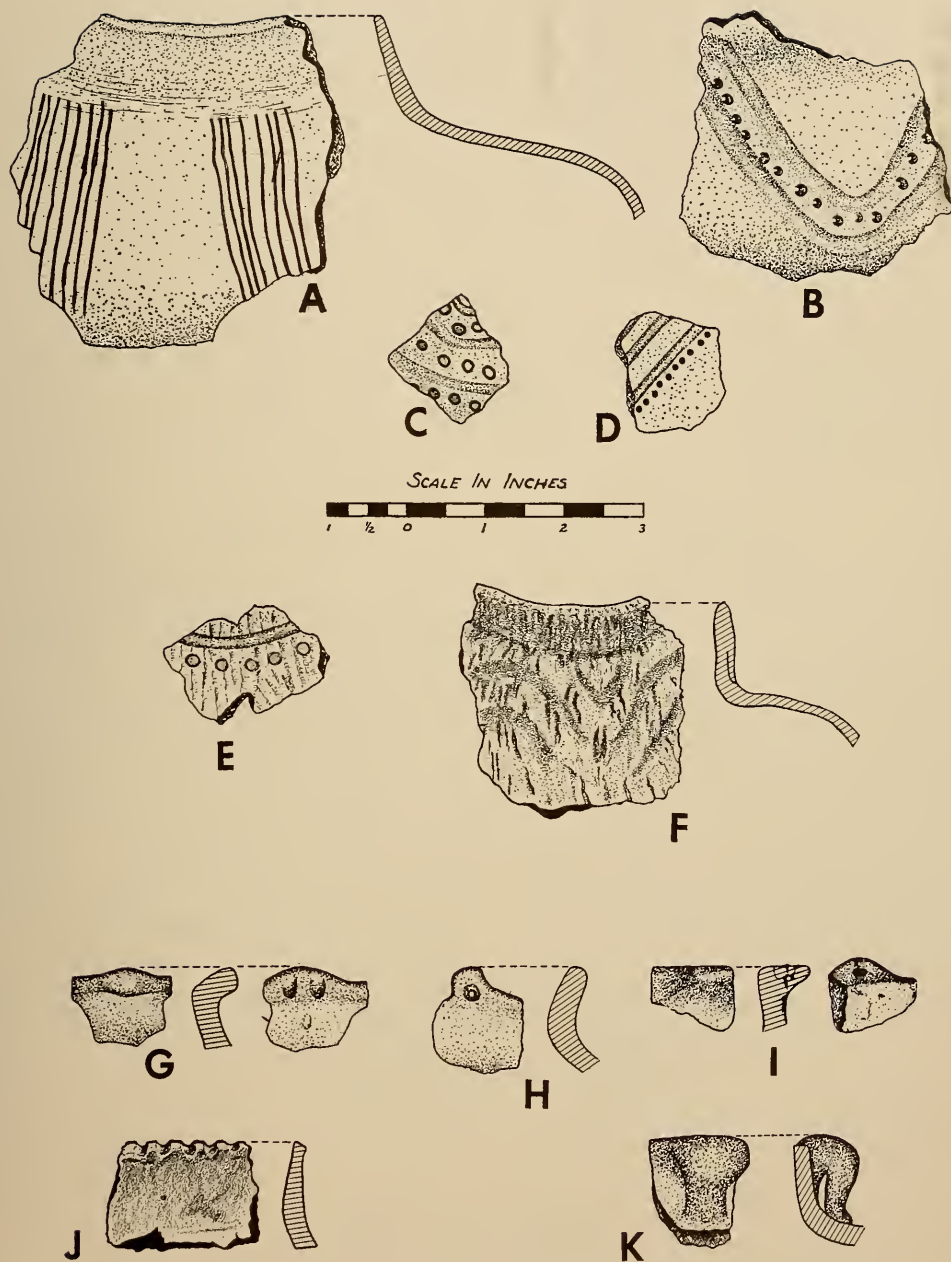


Fig. 9—Langford Trailed (Plain Surface) sherds.

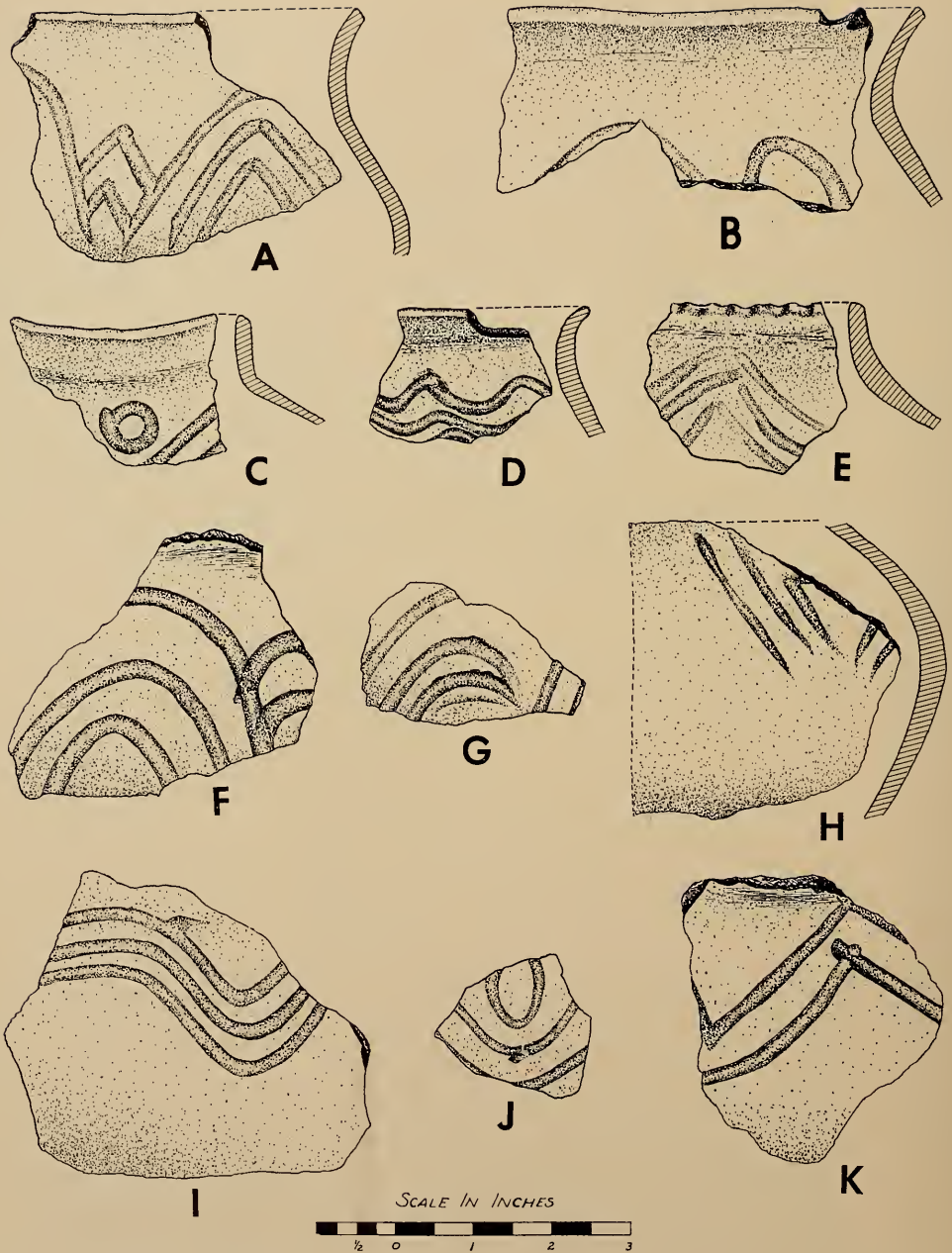


Fig. 10—Langford sherds from the Heally complex. A-D, *Langford Trailed* (Plain Surface); E, F, *Langford Trailed* (Cordmarked Surface); G-K, appendages belonging to Langford pottery.

Body—Mostly olla but some jar forms.
Many have a definite shoulder.
Base—Rounded.

APPENDAGES

None known from the Zimmerman Site.
Lugs and handles similar to—those found on *Langford Plain* occur at Fisher and Gentleman Farm.

PROBABLE RELATIONSHIP

The meander design, so prevalent on *Langford Trailed*, suggests a relationship with an identical design on an early Oneota type, *Grand River Incised* (Hall, 1960, Pl. 22C; McKern, 1945, Fig. 9, 10, 11, Pl. 71). Other examples of relationship to the same type can be found in punctates within horizontal meanders and circles between zigzags (Hall, 1960, Pl. 22E, 58E).

SYNONYMY

Synonymy, See *Langford Plain*

CATEGORY C—LANGFORD CORDMARKED (not illustrated)

TYPE MATERIAL

From the Fisher Site (Wi⁶), Period B (Griffin, 1946; 1948).

PASTE

Method of Manufacture—Probably paddle and anvil. Fracture is slightly irregular.

Temper—Fine to coarse, black, angular grit, usually moderately abundant but sometimes scarce.

Texture—Compact to coarse, sometimes laminated.

Hardness—Average is 2.5.

Color—Inside, outside, and core is usually the same: the range is from buff through red to black. A dirty orange or gray-white is frequently found.

Thickness—0.16 to 0.31 inches. Usually 0.16 inch at the body, 0.23 inch at the shoulder and 0.20 inch at the lip.

SURFACE FINISH

Cordmarked.

DECORATION

Rim—Vertical to outflaring. Rim collars occur.

Lip—Usually rounded but occurs flat and outslipping. It is sometimes pinched.

Body—Olla.

Base—Rounded.

APPENDAGES

None known at Zimmerman Site; small loop handles occur at the Fisher Site.

DISTRIBUTION

Whole pots are known from Period B at the Fisher Site (Griffin, 1946; Langford 1927: Pl. XXII, f.)

SYNONYMY

See *Langford Plain*.

CATEGORY D—LANGFORD TRAILED (CORDMARKED SURFACE) (Figs. 10E,F)

TYPE MATERIAL

From the Fisher Site (Wi⁶), Period B (Griffin, 1946; 1948).

PASTE

Method of Manufacture—Probably paddle and anvil. Fracture is slightly irregular.

Temper—Fine to coarse, black, angular grit; usually moderately abundant, but occurs both scarce and abundant.

Texture—Compact to coarse, sometimes laminated.

Hardness—Average 2.5.

Color—Inside, outside and core is usually the same: the range is from buff through red to black. A dirty orange or gray-white is frequently found.

Thickness—0.16 to 0.31 inches. Usually 0.16 inch at the body, 0.23 inch at the shoulder and 0.20 inch at the lip.

SURFACE FINISH

Cordmarked.

DECORATION

Technique—Relatively shallow trailing with a wide instrument; punctating done with a reed.

Area—Between the neck and the shoulder.

Design—Long line trailing of two, three, or four curvilinear parallel undulating lines in a meander pattern around the shoulder. One example of a curvilinear guilloche (?) is present. In some cases only the center undulating line

is continuous; the outside lines appear either as circles placed above the dips or below the peaks of the undulating line or, as in one example, broken parallel lines in those places. One example of three lines hanging in festoons was found on the surface at Ls^v13. Otherwise this design, which is sometimes found on *Langford Trailed* at the Fisher site (Griffin, 1946), is absent at the Zimmerman Site. Rows of reed punctates occur rarely between the parallel lines.

FORM

Rim—Vertical to outflaring. Collared rims occur.

Lip—Rounded and crenelated.

Body—Olla.

Base—Probably rounded.

APPENDAGES

None known at the Zimmerman Site.

SYNONYMY

See *Langford Plain*.

CATEGORY E—UNDESIGNATED SHELL PLAIN (not illustrated)

PASTE

Method of Manufacture—Probably paddle and anvil. Fracture is irregular.

Temper—Fine to coarse shell moderately abundant to abundant.

Texture—Laminated, sometimes compact.

Hardness—2.0.

Color—From buff to black.

Thickness—0.12 to 0.39 inches. Usually 0.16 at body, 0.20 inch shoulder, 0.23 inch at lip.

SURFACE FINISH

Smoothed.

DECORATION

None.

FORM

Rim—Vertical or outflaring, sometimes collared.

Lip—Flat outslipping or flat horizontal, sometimes crenelated.

Body—Olla.

Base—Apparently rounded.

APPENDAGES

None definitely associated.

PROBABLE RELATIONSHIPS

The separation of this category from Category L is tenuous in the mixed areas of the site. In Grid C it probably represents all the undecorated sherds accompanying Category F.

CATEGORY F—UNDESIGNATED SHELL TRAILED (PLAIN SURFACE) (Figs. 11G,H)

TYPE MATERIAL

The Zimmerman Site (Ls^v13); based on 24 sherds.

PASTE

Method of Manufacture—Probably paddle and anvil. Fracture is irregular.

Temper—Laminated and coarse, sometimes compact.

Hardness—2.0.

Color—From buff to black.

Thickness—0.12 to 0.23 inch. Usually 0.16 inch at body, and 0.20 inch at shoulder.

SURFACE FINISH

Smoothed.

DECORATION

Technique—Shallow trailing, similar to *Langford Trailed*.

Area—Between the neck and shoulder.

The lip is often crenelated.

Design—Two or three curvilinear, undulating parallel lines that are identical to *Langford Trailed* (Category B).

FORM

Rim—Vertical or outflaring.

Lip—Unknown.

Body—Apparently olla.

Base—Unknown.

APPENDAGES

None known.

CULTURAL ASSOCIATION

Characteristic of the pre-contact Heally complex.

PROBABLE RELATIONSHIPS

The differences that separate this category from *Fisher Trailed* as described

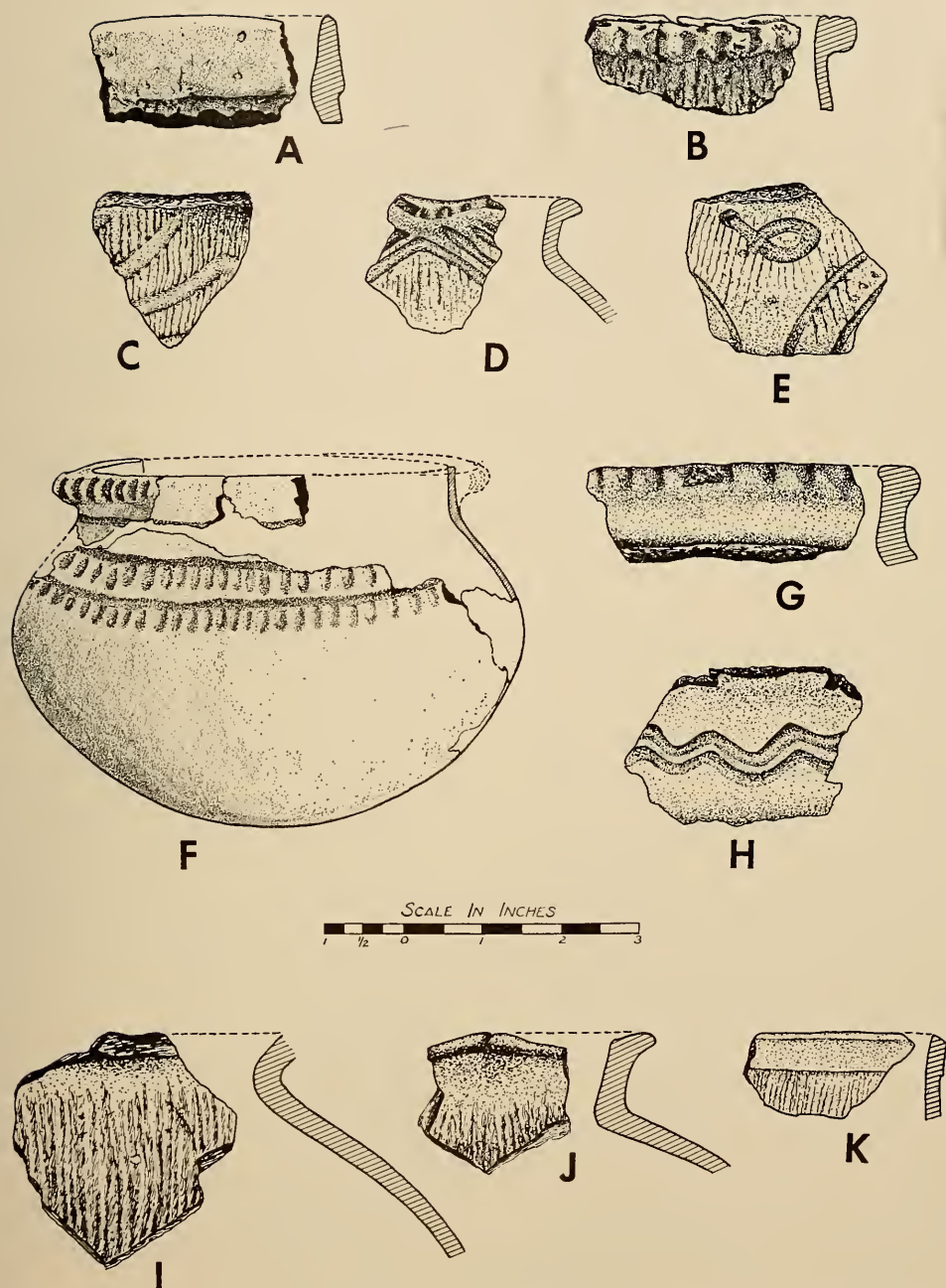


Fig. 11—Shell tempered pottery from the Heally complex. Cordmarked surface sherds: A, rim showing folded collar; B, a typical lug which is an extrusion of the lip; C-E, *Heally Trailed* sherds; Plain surface vessel and sherds: F, a vessel with an atypical design found in a pit (C-3f) outside and later than house C-3; G, rim sherd; H, *Grand River Incised* (?); Foreign shell tempered sherds from the Heally component: I, J, *Cahokia Cordmarked*; K, unknown affiliation.

by Griffin (1946; 1948) are the same as, in the case of Category H (*Heally Trailed*). Most of the sherds in this category can be assigned to *Grand River Incised* (Hall, 1960).

CATEGORY G—UNDESIGNATED SHELL CORDMARKED (Figs. 11A,B)

PASTE

Method of Manufacture—Probably paddle and anvil. Fracture is irregular.

Temper—Fine to coarse shell moderately abundant to abundant.

Hardness—2.0.

Color—Buff through red to black.

Thickness—0.12 to 0.62 inches. Usually 0.16 inch at body, 0.20 inch at shoulder, 0.16 inch at neck, 0.20 to 0.31 inches at lip and 0.62 inch at lip with lug.

SURFACE FINISH

Cordmarked, often with partial smoothing.

DECORATION

None except a single row of reed punctates at the top of the lip surface.

FORM

Rim—Vertical to outflaring, sometimes collared (Fig. 11A).

Lip—Flat horizontal, flat outflaring, flat outsloping, rounded, and sometimes widened into a lug punctated on top.

Body—Probably olla and/or a jar.

Base—Rounded.

APPENDAGES

Lugs, applied after cordmarking, were notched on the outer surface and two rows of punctates on the top (Fig. 11B).

PROBABLE RELATIONSHIPS

The separation of this category from Category M, *Danner Cordmarked*, is tenuous in mixed areas of this site. This category is generally thinner and darker than *Danner Cordmarked*. In Grid C this category represents essentially the undecorated sherds accompanying Category H, *Heally Trailed*.

CATEGORY H—HEALLY TRAILED (Figs. 8E; 11,C-E)

TYPE MATERIAL

Tentative type from the Zimmerman Site (Ls^v13), based on 118 sherds.

PASTE

Method of Manufacture—Probably paddle and anvil. Fracture is irregular.

Temper—Fine to coarse shell, moderately abundant to abundant.

Hardness—2.0.

Color—From buff to black.

Thickness—0.12 to 0.23 inches. Usually 0.16 inches at the body and 0.20 inches at the shoulder.

SURFACE FINISH

Cordmarked, often with partial smoothing.

DECORATION

Technique—Shallow trailing and some punctating with a reed. Technique is the same as on *Langford Trailed*.

Area—Between the neck and shoulder.

Design—Two, three, or four curvilinear undulating parallel lines are most frequently found. There is one example of a curvilinear guilloche. Sometimes only the center line is continuous with the outside lines forming either circles or broken parallel lines inside the depressions or peaks of the continuous line (Fig. 11c). This decoration also occurs with reed punctating.

FORM

Rim—Unknown.

Lip—Unknown.

Body—Probably olla and/or jar.

Base—Unknown.

APPENDAGES

None known.

CULTURAL ASSOCIATION

Characteristic of the pre-contact Heally complex from houses C-3 and C-8/13.

PROBABLE RELATIONSHIPS

This proposal of this type entails a division of *Fisher Trailed* as it has been described by Griffin (1946; 1948). *Heally Trailed* is characterized by simple curvilinear motifs, almost solely the meander, which are identical to

those on *Langford Trailed* but are different than the earlier shell tempered, elaborately trailed pottery from the Fisher Site. The analysis of Fisher pottery by Cutter (n. d.) has shown that the bulk of decoration on the shell tempered pottery is confined to festoons, and vertical line and punctate borders. Moreover, *Heally Trailed* has shallow trailing and reed and stick (?) punctates liberally employed (Griffin, 1946; Cutter, n. d.).

POTTERY OF THE SWANSON COMPLEX

CATEGORY I—SWANSON SMOOTH (Fig. 12C)

TYPE MATERIAL

From the Zimmerman Site (Ls^v13); based 133 sherds.

PASTE

Method of Manufacture—Probably paddle and anvil. Fracture is slightly irregular.

Temper—Medium sized and fairly abundant granitic grit that is mostly white or amber (quartz?). There are often large grit inclusions and sometimes the temper is sparse.

Texture—Compact to coarse.

Hardness—2.5.

Color—Inside and outside runs from buff to red-brown. The core is buff.

Thickness—0.16 to 0.23 inches.

SURFACE FINISH

Smoothed thoroughly over cordmarking.

DECORATION

Technique—Notching at the lip with a sharp instrument is known in one case.

Area—Interior of the lip.

Design—Parallel vertical notching.

FORM

Rim—Slightly outflaring.

Lip—Rounded.

Body—Unknown.

Base—Unknown.

APPENDAGES

None known.

PROBABLE RELATIONSHIPS

Similar, if not identical, pottery occurs on Starved Rock and at the nearby Hotel Plaza Site (Orr 1949b). The chief differences lie in the amount of smoothing over cordmarking and in the slightly different lip notching. At Starved Rock and the Hotel Plaza Site this Late or Terminal Woodland Pottery occurs in historic context. Pottery that is close to *Swanson Smooth* is in the collections from Moccasin Bluff Site, Berrien County, Michigan, at the Illinois State Museum.

CATEGORY J—SWANSON CORDMARKED (Fig. 12, A,B,D)

TYPE MATERIAL

From the Zimmerman Site (Ls^v13); based on 308 sherds.

PASTE

Method of Manufacture—Probably paddle and anvil. Fracture is irregular.

Temper—Medium sized and fairly abundant granitic grit that is mostly white or amber (quartz?). There are often large grit inclusions and sometimes the grit is sparse.

Texture—Medium to compact.

Hardness—2.5.

Color—Inside and outside runs from buff to red-brown. The core runs from buff to red.

Thickness—0.23 to 0.27 inches. It is 0.27 inch at the body and 0.23 inch at the neck and lip.

SURFACE FINISH

Cordmarked, partial smoothing occurs.

DECORATION

Technique—Finger nail impressions at the base of the neck and notching at the lip with a stick are the only known techniques.

Area—Neck and lip.

Design—A band of shallow punctates is the only known design.

FORM

Rim—Slightly outflaring.

Lip—Rounded.

Body—Jar with slightly marked shoulder.

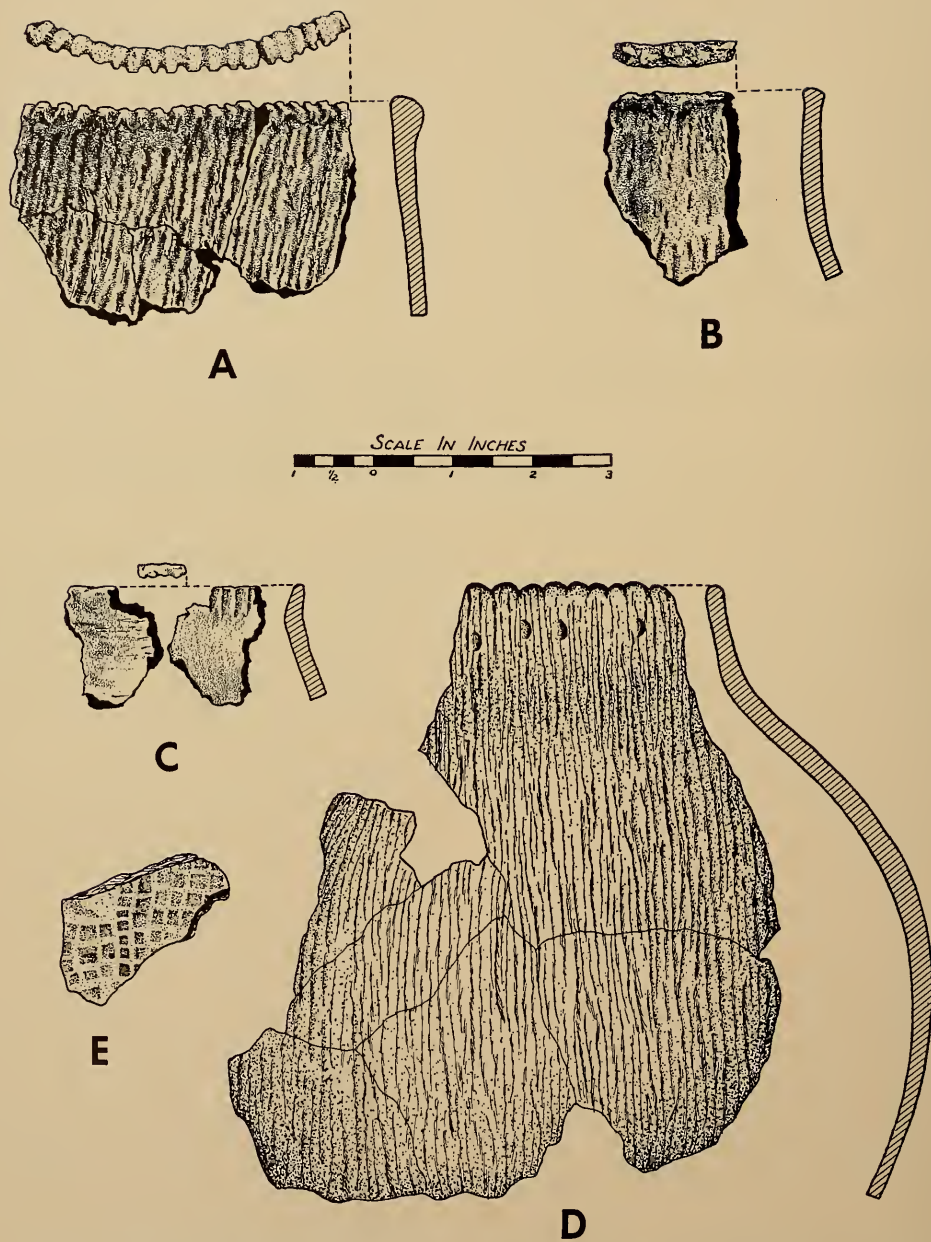


Fig. 12—Swanson complex pottery. A, B, D, *Swanson Cordmarked*; C, *Swanson Smooth*; E, *"Swanson Check Stamped"*.

Base—Apparently sub-conoidal to hemispherical (elongated spheroidal).

APPENDAGES

None known.

PROBABLE RELATIONSHIPS

Similar, if not identical, pottery occurs on Starved Rock and at the nearby Hotel Plaza Site (Orr 1949b). The chief differences lie in the amount of smoothing over cordmarking and in the slightly different notching of the lip. At Starved Rock and the Hotel Plaza Sites this Late or Terminal Woodland pottery occurs in historic context. Pottery that is close to *Swanson Cordmarked* has been found at the Fisher Site and at the Moccasin Bluff Site, Berrien County, Michigan.

HISTORIC SHELL TEMPERED POTTERY

CATEGORY K—DANNER GROOVED PADDLE (Fig. 13A)

TYPE MATERIAL

Material from the Zimmerman Site (Ls^v 13) (Keller 1949). Description based on 64 sherds and one restored vessel (Fig. 13E).

PASTE

Method of Manufacturing—Probably

paddle and anvil. Fracture is irregular. Temper—Crushed shell of medium size and moderately abundant. Leaching is common.

Texture—Always fine. The paste seems to have been of silt giving some of the sherds a very smooth "feel".

Hardness—Average is 2, but a maximum of 3.5.

Color—Most sherds are light tan, but grey, dark grey, and salmon colored sherds are also present. Dark fire clouds are common.

Thickness—0.16 to 0.47 inches. Usually 0.16 to 0.27 inches at body, 0.20 inch at neck, and 0.20 to 0.47 inches at lip (including lugs).

SURFACE FINISH

Grooved paddle impressions are found below the shoulder and smoothed surfaces are found above the shoulder. The impressions are applied diagonally in the two cases where it is possible to determine. The grooves are between 0.08 and 0.12 inches wide. Some smoothing over the grooves probably occurs. A few show longitudinal striation.

DECORATION

Technique—Shoulder punctates, rim appliques, only one instance of probable incising of the neck known.

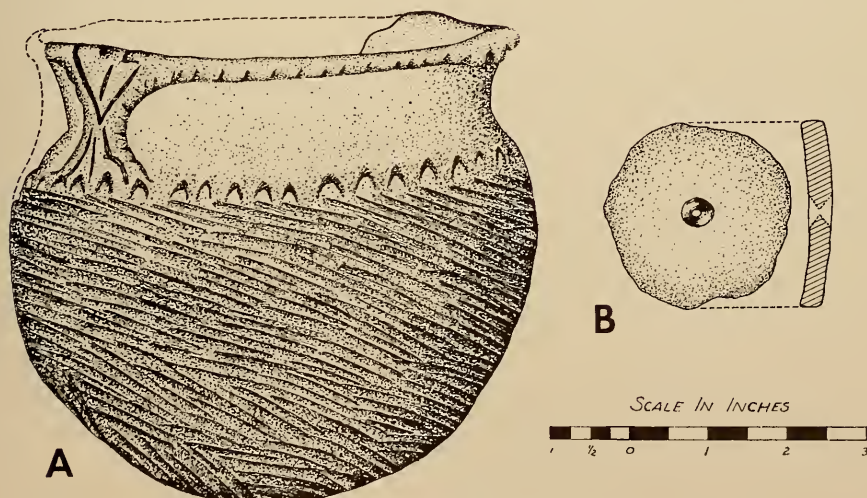


Fig. 13—A, *Danner Grooved Paddle* vessel found with Burial 1; B, shell tempered pottery disk that probably belongs to the Zimmerman complex.

Area—Shoulder. In the two cases where the smoothed neck met the grooved body at the shoulder, they were separated by a band of blunt stick punctates. Most rim stripes occur horizontally around the vessel neck, $\frac{1}{4}$ " to 1" from the lip. The strips are notched either by fingers or stick impressions.

Design—There is one example of a very small body sherd with an incised design.

FORM

Rim—Outflaring.

Lip—Rounded—lip notching is frequent.

Body—Jar.

Base—Rounded.

APPENDAGES

Hour-glass strap handles and lugs occur.

The restored vessel had two "hour-glass" strap handles and two wide horizontal lugs which are projections of the filleted pinched-up strip around the rim. Four other hour-glass handles are decorated with vertical or vertical crossing incised lines (Figs. 15G, H), and notched on the edge with a stick. One handle is contracting and plain. Two of the 13 rims either have a scalloped rim or are scalloped in the rim area.

DISTRIBUTION

Section 2 of Grid A of the Zimmerman Site (Ls^v13) has the only known large collection of this type. A few sherds are known from the Hotel Plaza (Ls^v36) (Keller, 1949) and the Simonson site (Ls^v15) (Bluhm, personal communication).

CULTURAL ASSOCIATION

It is associated with the Danner complex which occurs with early trade goods at the Zimmerman Site. This type was presumably produced by a group of the Shawnee.

TIME RANGE

Early historic, specific range unknown.

PROBABLE RELATIONSHIP

This type is closest to *Madisonville Grooved Paddle* (Orr and McGregor, 1947; Keller, 1949; cf. Griffin, 1943: 141, 349). Fillets similar to those found at

Zimmerman occur as a variant in the Madisonville Focus (Griffin, 1943: 135, Pl. LXXIV, 12, 14).

CATEGORY L—UNDESIGNATED SHELL TEMPERED PLAIN (Fig. 14)

PASTE

Method of Manufacture—Probably paddle and anvil. Fracture is irregular.

Temper—Medium shell, abundant.

Texture—Laminated, soft.

Hardness—2.0 or less.

Color—The inside and outside are tan to black; the core is buff to black.

Thickness—0.16 to 0.35 inches. Usually the body, neck and lip are the same.

SURFACE FINISH

Smoothed.

DECORATION

Technique—This type is characterized by frequent incising and crenelation of the lip (Figs. 8B; 14A, C, E, F).

Area—Shoulder, lip, and handle.

Design—A few examples show groups of vertical incised lines (Figs. 8B; 14B, D, E, F).

FORM

Rim—Vertical to outflaring, the angle at the neck ranges from slight to angular.

Lip—Usually slightly rounded and thickened.

Body—Probably mostly olla-shaped, one sherd (Fig. 14A) may be from a deep plate.

Base—Unknown.

APPENDAGES

Loop and strap handles and bi-partite lugs occur that start below the lip or at the lip (Figs. 8B; 14C, D).

PROBABLE RELATIONSHIPS

This category includes a few decorated sherds that show Oneota-like designs. Since sherds of this category appear to occur in historic context at the Zimmerman site many are probably from the necks of Danner vessels. This category is not well separated from Category E.

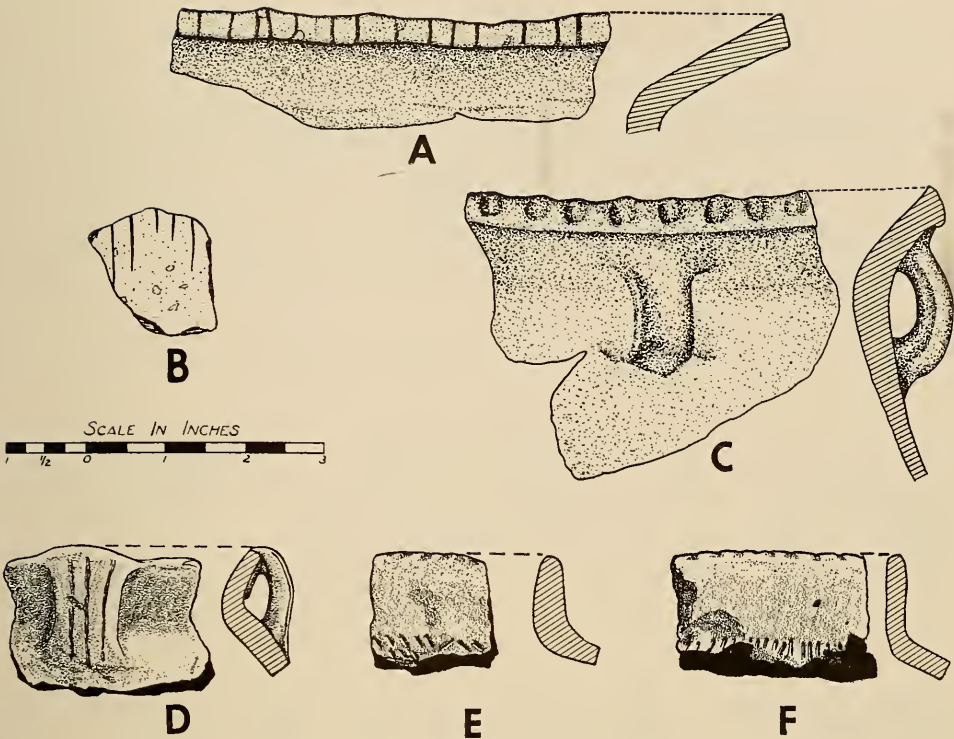


Fig. 14—Oneota-like sherds of the Zimmerman complex.

CATEGORY M—DANNER CORDMARKED
(Figs. 8D; 15A-C)

TYPE MATERIAL

From the Zimmerman site (Ls¹³), chiefly Grid A, Section 2. Description based on over 100 sherds.

PASTE

Method of Manufacture—Paddle and anvil, anvil marks occurring on the interiors. Fracture is very irregular.

Temper—Medium to coarse shell, usually abundant. Leaching common.

Texture—The texture is always fine. The paste seems to have been made of fine silt giving some of the sherds a very smooth “feel”.

Hardness—2.0 or less.

Color—Most sherds are light tan, but gray, dark grey, and salmon colored sherds are also present. Dark fire clouds are common.

Thickness—0.16 to 0.46 inches. Usually 0.16 to 0.29 inches at body, 0.20 inch

at neck, and 0.20 to 0.46 inches at lip (including lugs).

SURFACE FINISH

Cordmarked impressions are usually found below the shoulder and the area above the cordmarking is smoothed. One case of cordmarking up to the neck is known. The cord impressions are applied horizontally and vertically.

DECORATION

Technique—Shoulder punctates are made (3 cases) by finger. Appliques are found just below the rim as in *Danner Grooved Paddle*.

Area—Same as *Danner Grooved Paddle*.

Design—None known.

FORM

Rim—Outflaring, one example.

Lip—Outflaring with angular edges, one example.

Body—Unknown.

Base—Unknown.

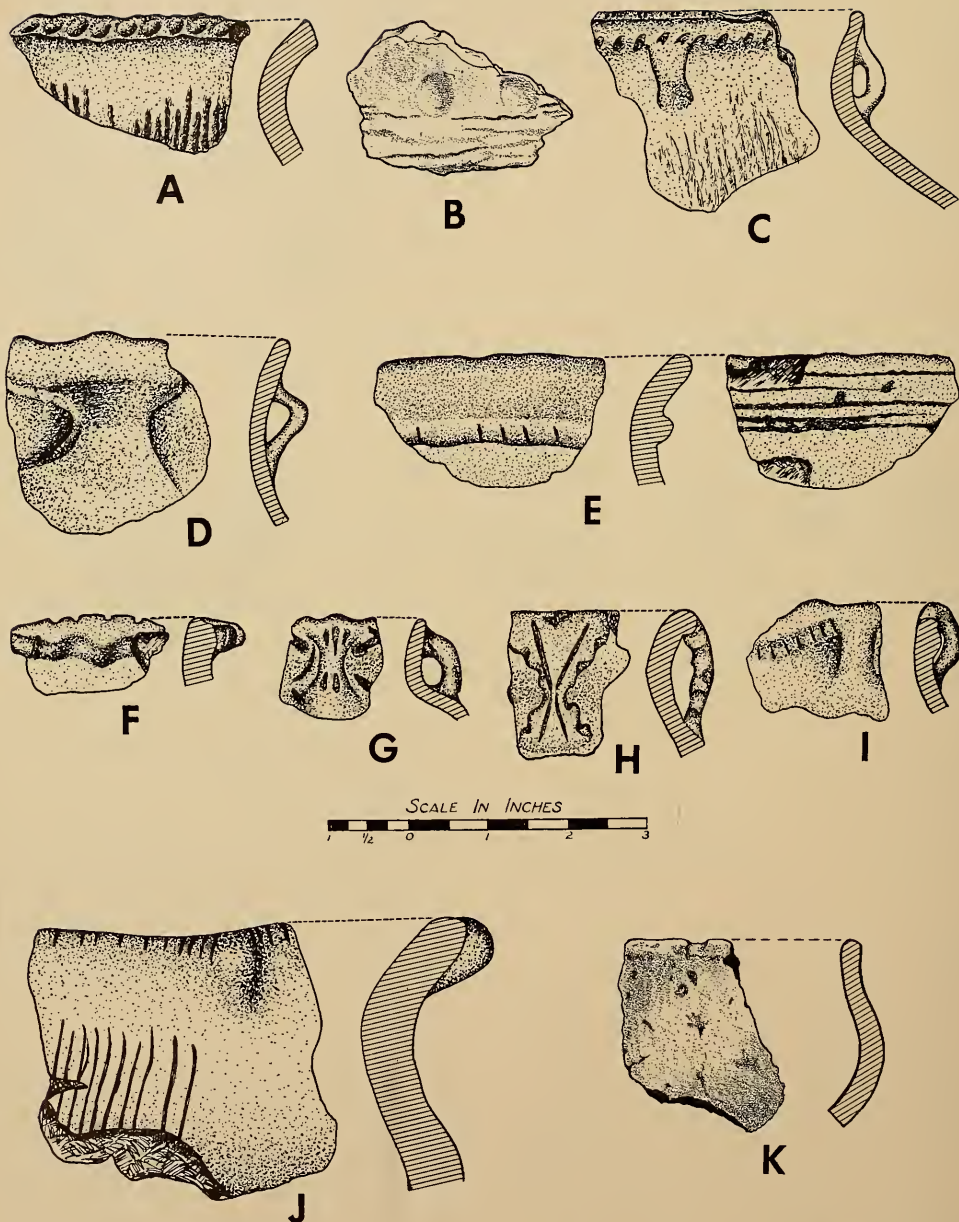


Fig. 15—Danner complex sherds. A-C, *Danner Cordmarked*; D-I, rims and appendages belonging to either *Danner Grooved Paddle* or *Danner Cordmarked* types; J, Part of the "Danner Thick" pot; K, an aberrant sherd probably from a toy or miniature pot.

APPENDAGES

Undecorated, hour-glass handles occur.

DISTRIBUTION

At the present stage of knowledge it seems to be limited to the Zimmerman Site. This type, however, may prove to be difficult to separate from a similar type, *La Salle Filleted*, found at the Starved Rock, Hotel Plaza, and Simonsen sites (Keller 1949).

CULTURAL ASSOCIATION

It is associated with the Danner complex and occurs as a companion type to *Danner Grooved Paddle*.

PROBABLE RELATIONSHIP

This type is closest to *Madisonville Cordmarked* (Orr and McGregor 1947; Keller 1949; cf. Griffin 1943: 132-141, 346-7, Pl. CIV-CX), particularly in the frequency of lip notching (Griffin 1943: 134). Outside Grid A it could be easily confused with Category G.

VARIANT AND FOREIGN SHERDS

A number of sherds were found that do not fit the thirteen categories. Some are variants in the surface treatment of these categories and others represent types more prevalent elsewhere.

Variant Sherds

A "Langford Check Stamped" variant

was said to be found on a few sherds from house C-3. These sherds were not found by the editor.

A "Swanson Checked Stamped" variant was found on eight sherds from storage pit B-7a (Fig. 13E).

A "Swanson Simple Stamped" variant was found on one sherd from pit B-3.

A "Danner Thick" variant consists of seven sherds from one vessel from pit A-32 (Fig. 15J). It is decorated on the shoulder with a group of vertical incised lines and has incised lines on the lip. Two lugs occur just below the lip. A green or blue glass bead was found in the paste. This vessel differs from the common Danner types in being thick and smoothed surfaced (Keller, 1949). Two other sherds from a small undecorated globular pot came from pit A-40 (Fig. 15K).

Foreign Sherds

Cahokia Cordmarked. Two sherds, identified by Dr. Warren L. Wittry, can be assigned to this type (Fig. 12i, j). The sherd shown in Figure 12i was found in Grid D in the fill above Burial 13 and probably belongs to the Heally occupation zone. The sherd shown in Figure 12j was found in the occupation of house group C-14.

"Unknown shell-tempered." A shell-tempered sherd with a folded rim (Fig.

TABLE 5
SCHEMATIC DIAGRAM OF THE STRATA OVERLYING HOUSE PIT C-8

Designation in the Present Report	Physical Description of the Strata	The Range of the Upper and Lower Limits of the Strata	Excavator's Designation
Plow Zone	Brown sand	0" to 6"	C-8, level 1 0 0"-6"
Sub-plow Occupation	Dense, black sand	6" to 9-12"	C-8, level 2 6"-12"
Midden	Light brown sand with much shell and bone	12" to 20-26"	C-8b
House Fill	Grey brown sand	9-12" to 20"	C-8, level 3 12"-18"
Occupation over the Floor of House C-8/13	Grey brown sand	20" to 26-33"	C-8/13, levels 4-6 18"-33"

TABLE 7
FREQUENCIES OF WIDTH OF INCISED AND TRAILED LINES ON LANGFORD TRAILED TYPES IN TWO LEVELS
IN AND OVER HOUSE PIT C-8

	WIDTH OF TRAILING AND INCISING IN MM.								
	1	2	3	4	5	6	7	8	Total
C-8, sub-plow occupation	1	4	11	10	3				29
C-8/13, house occupation		9	19	18	9	2	1	1	59
Totals	1	13	30	28	12	2	1	1	88

represented and a later period in which *Langford Plain* and *Langford Trailed* types predominate. The earlier period is represented mainly by house C-3 and to a lesser extent by the occupation of houses C-8/13. The later period is represented by the sub-plow occupations and the midden C-8b. The house group C-14 seems to be intermediate.

The trends observed within the Heally complex can be duplicated by the sequence at the Fisher site (Griffin, 1946, 1948), although there are several differences. At the Fisher site the earliest Upper Mississippi component, which is Period A, is a shell-tempered early Oneota-like ceramic complex whose dominant types are not found at Zimmerman (see previous section). It is followed by Period B in which there seems to be no shell-tempered pottery, only Langford pottery. In Period C only

Langford Plain has been found. It is apparent that Fisher A has no counterpart at the Zimmerman site and that Fisher B and C are more like the later part of the Heally sequence. The correlation of Fisher B and C with the later part of the Heally sequence is confirmed by the presence of *Langford Noded* in Fisher B and in only the later part of the Heally sequence. The implication of the relative ages of the parts of the Heally sequence and the later two Fisher periods will be discussed in Chapter XII.

Since the occupation level of houses C-8/13 on the one hand and the overlying sub-plow occupation on the other seem to be fairly representative of the earlier and later parts of the Heally sequence, an examination of certain pottery attributes may be useful in eliciting trends within the duration of Langford pottery. For this purpose the frequencies of four specific

TABLE 8
FREQUENCIES OF SHERDS IN SWANSON COMPONENT FEATURES

	SWANSON FEATURES							
	B-2	B-4	B-7a	B-11	B-14	Ba-14	Ba-16	Total of all features
Swanson Cordmarked	106 (99%)	5 (100%)	75 (90%)	2 (2%)		1 (100%)	1 (100%)	188 (61%)
Swanson Smooth				107 (98%)	4 (100%)			111 (36%)
"Swanson Check Stamped"			8 (10%)					8 (3%)
Totals	106	5	83	109	4	1	1	307

TABLE 9
FREQUENCIES OF SHERDS IN DANNER COMPONENT FEATURES

	DANNER FEATURES															
	A-21	A-23	A-25	A-29	A-32*	A-34*	A-36*	A-37	A-38*	A-40*	A-41	Ba-3*	Ba-4*	Wray #1	Wray #2	Total
Danner Cordmarked . .	1 (100%)	1 (100%)			4 (25%)		13 (62%)	1 (25%)		3 (13%)	1 (100%)	7 (39%)		11 (84%)	4 (100%)	46 (39%)
Danner Grooved Paddle . .			1 (100%)		1 (6%)	1 (100%)		2 (50%)	1 (100%)	10 (43%)		1 (5%)	2 (23%)			18 (15%)
Plain Shell Tempered . .				3 (100%)	11 (69%)		8 (38%)	1 (25%)		10 (43%)		7 (39%)	7 (77%)	2 (16%)		50 (43%)
Langford Plain												3 (17%)				3 (3%)
Totals	1	1	1	3	16	1	21	4	1	23	1	18	9	13	4	117

*Indicates an association with trade goods.

aspects of ceramic decoration and technique were selected. These four, however, are not intended to be exhaustive. They are shown in Table 7 and 8. Several trends seem to emerge, although no statistical tests were applied. There seems to be a trend toward loss of notched lips, of punctates unaccompanied by trailed lines, and of trailed lines without circles. There also seems to be a trend toward a change in the range of widths of incised and trailed lines. Although the modes and perhaps the means of line widths have not changed, there are more wide lines in the earlier period than the later.

TABLE 10
FREQUENCIES OF SHERDS IN HISTORIC HEALLY FEATURES

Features	Langford Plain	Langford Trailled (Plain)	Langford Cordmarked	Swanson Smooth	Swanson Cordmarked	"Swanson Simple Stamped"	Danner Grooved Paddle	Plain Shell Tempered (E+L)	Danner Cordmarked (M+G)	Total
A-4*	1 (7%)							6 (43%)	7 (50%)	14
A-6*	36 (54%)						5 (7%)	12 (18%)	14 (21%)	67
A-10*	7 (64%)							1 (9%)	2 (18%)	10
A-11	3 (25%)								9 (75%)	12
A-16*	1 (8%)							6 (50%)	5 (42%)	12
A-17	5 (25%)		1 (5%)				3 (15%)	1 (5%)	10 (50%)	20
A-20*	1 (17%)			1 (17%)				4 (66%)		6
A-22*	15 (55%)			4 (15%)	1 (4%)		3 (11%)	3 (11%)	1 (4%)	27
A-27*	7 (9.5%)		5 (7%)				7 (9.5%)	30 (42%)	23 (32%)	73
Ba-1	4 (58%)						1 (14%)	2 (28%)		7
Ba-6	1 (12%)							7 (88%)		8
B-1*	5 (16%)							26 (84%)		31
B-3*	1 (3%)	1 (3%)				1 (3%)		32 (91%)		35
B-5*	4 (5%)		2 (3%)		1 (1%)			73 (90%)	1 (1%)	81
B-6*	1 (25%)							3 (75%)		4
B-13	1 (6%)			13 (76%)				2 (12%)	1 (6%)	17
Wray no. 4	2 (25%)			1 (12%)				4 (50%)	1 (12%)	8
Wray no. 5*	1 (6%)							12 (75%)	3 (19%)	16

*Indicates an association with trade goods.

CHAPTER VIII

STONE, BONE, ANTLER, AND SHELL ARTIFACTS*

CHIPPED STONE ARTIFACTS

Projectile Points, Triangular

Triangular points are relatively common at the Zimmerman site. The Heally component has yielded 17 whole points and 13 fragments; the Swanson component, one fragment; the Danner component, one whole point and 9 fragments; and the Historic Heally component, three whole points and six fragments. This tabulation, which differs from that of previous workers (Sears and Shalkop 1947; Keller 1949), is the editor's own. It differs in part because some specimens have disappeared and in part because in this report some of the cruder points have been classed as bifacially worked scraper-knives.

In the Heally component the points range from 0.47×0.65 inch (1.2×1.7 cm.)

*This chapter is partly drawn from the study of Sears and Shalkop (1947) and partly from what can be gleaned from the collections and notes in the Illinois State Museum. The editor is indebted to Dr. Paul W. Parmalee for the identification of the bone, antler, and shell.

to 0.64×1.33 inches (1.7×3.4 cm.). Two isosceles-shaped points, which came from in or near the sub-plow occupation zone above house pit C-8, are serrated. The points in the Historic Heally component range in size from $1.01 \times$ over 1.29 inches ($2.6 \times$ over 3.3 cm.) to 0.43×0.65 inches (1.1×1.7 cm.).

A classification of triangular points based on shape has been set up by Sears and Shalkop (1947) closely following one established by Griffin (1946: 37-9). There were nine forms which were combinations of three variations of base and edge shape: straight, convex, and concave-sided. All but one of the forms, that of a concave side and straight base form, are shown in Figure 17 C-K. The frequency of the nine forms in the Heally, Danner, and Historic Heally complexes is shown in Table 11 together with the frequency of the same forms that are found in the Fisher A and B complexes (Griffin 1945: 39). In both the Fisher A










Components	Triangular Point Forms									Totals
										
Heally	42% 15	20% 7	02% 1	17% 6	06% 2	02% 1	02% 1	02% 1	02% 1	35
Fisher A & B	58% 55	17% 16	07% 7	07% 7	02% 2	01% 1	05% 5	03% 3	01% 1	95
Danner	33% 1	67% 2								3
Historic Heally		20% 1		60% 3	20% 1					5

Table 11—Frequencies of triangular point shapes in four complexes (Based on Sears and Shalkop 1947 and Griffin 1946:38-9).

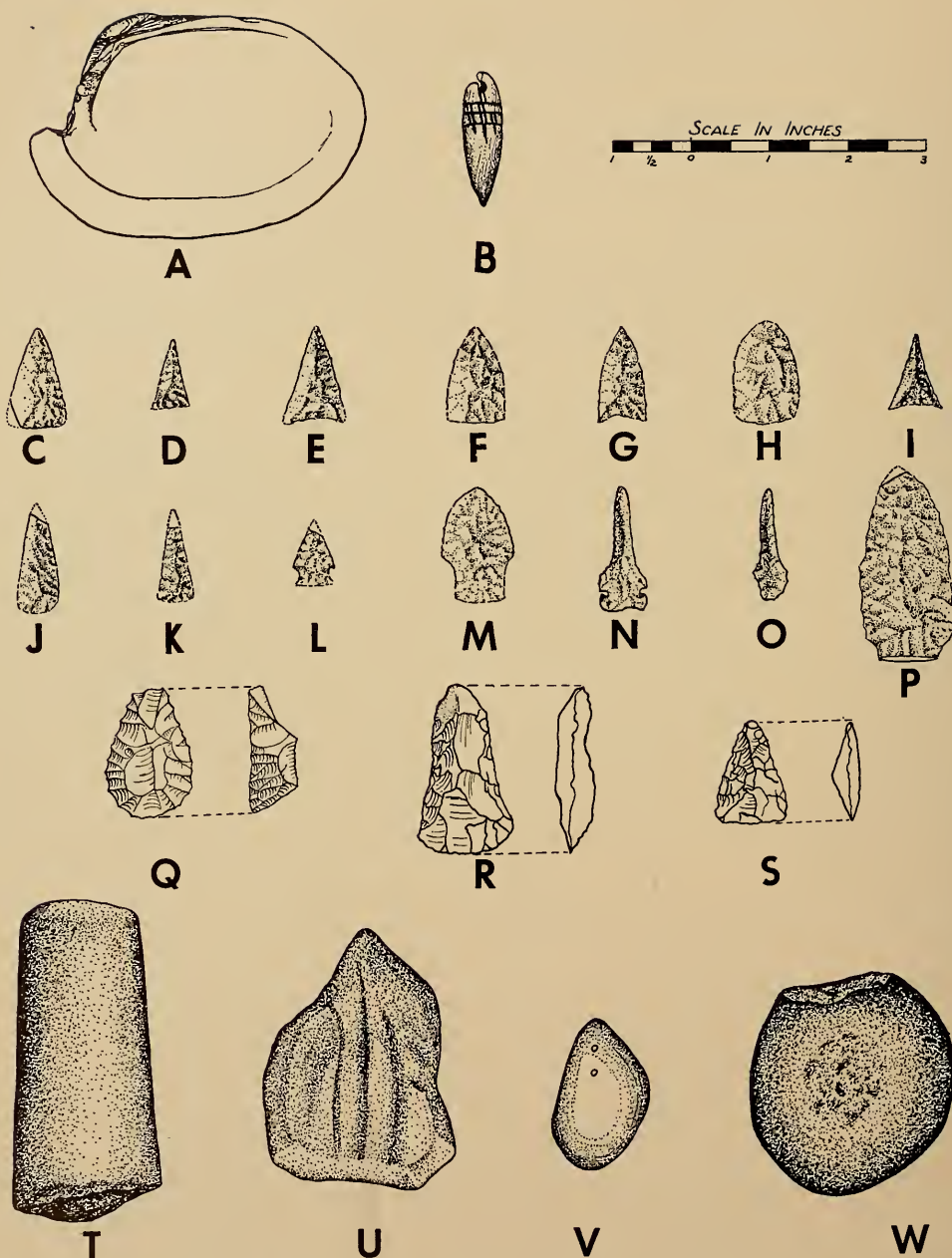


Fig. 17—Shell and stone artifacts. Shell artifacts: A, shell spoon with single notch; B, shell pendant; Chipped stone artifacts: C-K, triangular projectile points arranged in order of frequency, the most common at the left; L, small expanding stemmed point; M, straight stemmed projectile point; N, side notched expanding base drill; O, expanding base drill; P, knife; Q, plano-convex, snub-nosed end scraper; R, bi-convex, bi-facially worked scraper; S, bi-convex, triangular, "hump-back" scraper; Other stone artifacts: T, celt poll; U, multigrooved sandstone abrader; V, stone pendant; W, hammerstone. All artifacts are from the Heally complex, except L which is Danner, and G and N which are uncertain.

and B and Heally complexes the distribution of triangular point forms is very similar. The straight-sided shape is the preferred form and the straight edged and concave base shape is a secondary form. The other shapes are probably the result of occasional deviation from the preferred form.

Projectile Points, Straight Stemmed.

Two straight stemmed points were recovered. One came from the floor of house C-8/13 (Fig. 17M) and the other came from the sub plow occupation zone in Grid B. The same point style which was found in Heally contexts was made into a graver. These points are undoubtedly a legitimate part of the chipped stone assemblage since this type occurs more than once at the site and there is no evidence of a pre-Upper Mississippi occupation. In the case of the Fisher site, however, the straight stemmed points, as well as other stemmed and tanged styles that have been found with the Upper Mississippi occupations, were thought to be accidentally included (Griffin 1946:40-1).

Projectile Points, Expanding Stemmed.

One example of an expanding stemmed point came from a Danner storage pit, A-39 (Fig. 17I). This small point is only 0.76 (1.95 cm.) long.

Knives

Two types of knives seem to be represented. One is a large stemmed point shown in Figure 17P. The other is a large trianguloid or ovoid knife of which there is one and perhaps three examples. One is a tip 1.8 inches long which was found in the sub-plow occupation above house pit C-8 and another is 1.7 inches long which was found in pit A-32.

Drills

Three different drill types were found: an expanding base, a parallel-sided, and a side-notched type. The expanding base drill type is illustrated in Figure 17O. The length ranges from 1.4 to 1.6 inches.

The parallel-sided drill is represented by one example. It is a well chipped, nearly

cylindrical needle-shaped bar. It is 2 inches long and was found in Feature C-5.

One expanding base drill (Fig. 17N) with a side-notched base came from a feature (A-18) with trade goods but no pottery.

Graver

A graver was found that was made by the modification of a straight stemmed point of the type described above (Fig. 17M). It was made by chipping a new point that had one straight edge running at approximately a 45° angle to the axis of the tool and one concave edge. The tip of the graver is stout and sharp. It was found on the floor of house C-8/13.

Scrapers

Scrapers have been divided into two major classes: the plano-convex and the bi-convex.

The plano-convex class, which includes specimens with triangular and rhomboid cross section, consists of two types. One is bi-facially worked in which the ventral face has been worked either before and or, more frequently, after the flake was detached. This type is often large and oval in shape and may possibly be used cores. The other type is uni-facially worked and includes the true snub-nosed end scraper. It is produced by chipping only the dorsal face of a flake in order to take advantage of the curvature of the large flake scar (Fig. 17Q). Few snub-nosed scrapers were found in the excavation, but a large number have appeared in private collections from the site. Several specimens were quite large; one measured 2.3 by 1.5 inches.

The bi-convex class includes scrapers of many forms, but it is composed of two subclasses. One subclass, which is very distinctive, is made up of relatively large, heavy scrapers that are carefully chipped and well made. A number of different shapes are known; of which a bell shape (Fig. 17R), an ovoid, a triangular, and a truncated triangular can be singled out. This scraper type seems to be characteristic of the Heally complex since it has been observed in collections from Plum Island (Fenner n. d.) and Period B at Fisher (Griffin 1946:40) that

are at the University of Illinois, but it is not found in more typically Oneota sites from northern Illinois.

The other subclass, which is equally distinctive in another way, is made up of scrapers that are generally poorly made and often amorphous, but characteristically have a large standing hump on one face (Fig. 17s). The typical shape is triangular, but ovoid and various asymmetrical shapes occur. Some specimens are well worked on all edges, others are only retouched on one or two edges.

Scraper-knives, Bi-facially Worked.

The bi-facially worked scraper-knife is a designation for both large and small asymetrically, partially, and often roughly worked "points." Small "triangular points" are included that have one long edge convex and the other straight. Typically one edge and the point itself are the only retouched parts of the tool.

Scraper-knives, Flake.

All retouched or used flakes and spalls are included in this category.

Raw Materials.

A mottled gray-white flint, which sometimes has a yellowish tint, was the material for most of the chipped stone from the site. The source of this material was probably local. There were a few notable exceptions. The sole side-notched Danner point (Fig. 17L) was made from a red flint and the small stemmed point (Fig. 17M) was made of a pure white quartzite. A few of the triangular points were made from a lusterless gray or yellow flint. In the Danner component area were also found a great number of very dark blue-gray flint flakes, whose source is unknown.

GROUND AND POLISHED STONE ARTIFACTS

Pipe

A modified elbow pipe was recovered from the spoil heap of house C-3 in 1948 (Fig. 19). It is made of soft white limestone and its stem measures 2.4 inches long and its bowl 0.8 inch high. It is probably a

Heally artifact. In style it bears the greatest resemblance to pipes that have been recorded from Wisconsin (cf. West 1934: Pl. 196, 198, 207), but whose provenience is, unfortunately, unknown. Elbow pipes are usually found with this cultural complex (e.g. Fisher B, Griffin 1946).

Celts

The polls of four celts with a round cross section were encountered in the excavations (Fig. 17r). One complete example is known from the private Zimmerman collection. They are manufactured from a dark, close-grained igneous stone that is commonly found along the river. Three of the specimens came from the floor and fill of house C-8/13.

Shaft Smoothers

Two types of shaft smoothers were found: a single grooved and a multiple grooved type. Both types of shaft smoother have a U-shaped groove that is associated with shaft smoothing and are made of St. Peters sandstone, which is composed of nearly pure silica sand. The single grooved type has occurred only in contexts with European trade goods. One specimen was the end fragment of a paired Oneota arrow shaft smoother that was found in a storage pit, C-3g. It measured 1.65 inches wide and 0.8 inch deep, and had an ovoid cross section and a slightly tapered end. Another specimen of nearly the same size has a lenticular cross section (A-27).

The multiple grooved type is very generalized. An example from a historic storage pit, B-3, measured 1.9 inches long and has five relatively deep grooves that cross irregularly over all surfaces. The grooves were produced by a shaft of about .25 inches in diameter. Another example from the fill of house pit, C-8, has three short shallow grooves on three different edges.

Abrader

One multi-grooved abrader with many V-shaped grooves over both flat faces was found in the occupation of house C-8/13 (Fig. 17u). Unlike the shaft smoother, this abrader was probably used to sharpen bone and antler tools.

Milling Stones

One specimen from the fill of a corn roasting pit, B-7, was rectangular-shaped and had two faces ground flat. Two specimens (from C-14, B-2) had only one flat surface which showed striations.

Mano

A rectangular hand stone with finger pits on each of two flat sides was found in house C-3.

Hammerstones

A number of hand-sized, rounded pebbles were found that averaged about 2.5 inches in greatest diameter. They were pecked on the edges and three were pitted in the center of one face. All were of dark, close-grained, igneous rock except one that was of white chert. Three came from house C-8/13.

Pitted Stones

Two large round pieces of soft limestone were found in house group C-14 with a pecked pit on one surface. One, which was about 13 inches in circumference, has battered edges from use as a hammerstone. In addition, an example of a large, flat, igneous rock with a pit in one face was found in pit C-5.

Crescent-shaped Stone

A crescent-shaped object of soft sandstone 4 inches long was found in pit C-1. One end was smoothed and rounded.

Whetstones

Two whetstones have been recovered. One, a long stone with a rectangular cross section and sharp corners came from a historic storage pit, A-38. One face was worn to a smooth, even concave curve, and the ends showed wear. It measures $3.6 \times 0.8 \times 0.7$ inches. Another specimen that was found in the wall trench of C-8 has two flat, smoothed edges.

Pendant

A flat, ovoid, river pebble pendant was found on the floor of house C-8/13 (Fig. 17v). It measures 1.8 inches in greatest diameter and 0.6 inches in thickness.

Balls

Two stone balls were found. One which was made of fine textured limestone and was about 1.2 inches in diameter, was found in the refuse of a corn roasting pit Ba-11. The other, which was made of St. Peters sandstone and had an average diameter of about 1.4 inches, was found in pit C-1.

Cup

A small, bowl-shaped cup measuring about 1 inch in diameter and 0.4 inch high was found on the floor of house C-8/13. It was made of St. Peter sandstone.

Paint Stone

A small stone of undescribed shape was found in the fill of house pit C-8 with red ochre pigment directly underneath it.

Hematite

An oblong-shaped piece of hematite 4.5 inches long came from the occupation of house C-8/13. It had one face and one end worked smooth.

Red Ochre

Small pieces, as well as numerous flecks, of red ochre pigment were found throughout Grids A and C. A great deal of pigment was encountered in the excavation of house C-8/13.

Worked Slate

Broken pieces of worked slate were encountered in the fill of house pit C-8. They had smoothed parallel sides and rounded ends. Two pieces measured 1.2 by 1.4 inches. Other larger, burnt pieces occurred in the midden, C-8b.

BONE ARTIFACTS

Awls

Two worked splinters of long bone were found in house C-8/13. The tip of one specimen was worked to a round cross section and all its edges, including the cut, proximal end, were polished. The other specimen (Fig. 18n) had only a slightly smoothed tip.

Pins

Two pins fashioned from the flattened broad head of a scapula were found in



Fig. 18—Bone and antler artifacts: A, bone dish; B, wheel; C, bird-shaped pendant; D, section of ring; E, styliform deer bone ornament; F, bone counter; G, bone beamer; H, polished awl; I, bone splinter awl; J, needle; K, bone needle with perforation; L, elk (?) scapula celt; M, bison scapula hoe (drawn $\frac{3}{4}$ the size of other artifacts); N, stemmed projectile point made from bone splinter; O, cut antler; P, large point with hollowed base; Q, large antler flaker with flat base; R, projectile point. All artifacts are Heally except K, which is Historic Heally.

house C-8/13. The pointed end was shaped from the vertebral margin of the scapula. Artifacts similar to this are called scapula pins by Griffin (1946).

Perforator

A long (7.8 inches) needle-like implement was found in the occupation of house C-8/13 (Fig. 18J). The top was cut off squarely and was not perforated. It was probably made from a bird bone and the dorsal face and edges were polished.

Mat Needles

Two polished, flat sections of a large bone with simple gouged holes were found in historic period refuse pits (C-3c, Fig. 18k; and Wray No. 4). The one not illustrated has the hole at the pointed end. Both have the typical appearance of a needle used by the Prairie tribes to make reed mats.

Projectile Point

A splinter from a heavy long bone that had a definite shouldered stem (Fig. 18N) was found in house C-8/13.

Beamers

Two ends of two bone beamers or hide fleshers were found in Heally contexts. One was made from the metapodial of a deer (C-1) the other from the metatarsal of an elk (C-14; Fig. 18g). Implements such as these were used by historic tribes to remove the hair on hides.

Hoes

Eight bison scapula hoes have been found, two of which were associated with trade goods (A-39, C-4) and six of which are probably of historic age (B-10, B-15, Wray No. 6, 11). All have central perforations with worn edges that presumably were the means for hafting. The spines were hacked off in every case with practically no attempt in most cases at smoothing the edges. Only one hoe (B-10) had an unworked articular head; the other five had the heads removed to various extent.

Two hoes were unusual. One (Wray No. 11) has had the head and the neck com-

pletely removed, and the edges at both the glenoid and coracoid borders were cut down. In the center is a circular hole 1.4 inches in diameter. The other (Wray No. 6) has a trimmed glenoid border and was well worn to a polish on both edges and the outer face. The bit was cut to a bevel. A Danner specimen is illustrated in Figure 18M.

Spade?

A scapula of elk (?) was fashioned into a spade-like implement (Fig. 18L). This is the same tool referred to by Wray (1952: 162) as a scapula celt. The spine and the articular head were removed. The bit and the edges 2.3 inches up the sides are heavily worn, and there are numerous scratches perpendicular to the bit on both faces. The spade was found in a refuse pit (Survey No. 1).

Spatulate Implement

The end of a deer rib (Ba-3) has been smoothed to a rounded tip and has been polished one inch back from the tip.

Styliform Bone Ornament (?)

A styliform deer bone was found in house C-8/13 (Fig. 18E). The upper end was rounded and this object was thought (Sears and Shalkop 1947) to have been used as a plume holder.

Bone Tube

A bird bone of possibly the Canadian goose (*Branta canadensis*) with cut and smoothed ends was found in a historic period pit (Wray No. 4).

Ring

An arc section of a bone ring was found in the midden, C-8b (Fig. 18d).

Disk

An undecorated disk was cut from the bony opercle of probably the buffalo fish (*Ictiobus* sp.) The edges were smoothed and polished, and it was found in house group C-14 (Fig. 18A).

Ball

A ball made from a deer femur head was found on the floor of house C-8/13. The

cut edges were smoothed and the ball was about 1.6 inches in diameter.

Pendants

Two pendants were found in house C-8/13. One was part of an engraved, cut out wheel-shaped ornament (Fig. 18b). The other was a bird cut out of bone and detailed with engraved lines. The eye is represented by a hole (Fig. 18c).

Dish

Several fragments of a worked turtle carapace dish were found.

Gaming Counters

Seven semi-cylindrical counters were found (Fig. 18f). They were made from very compact material that is either bone or antler. At least one is made of bone and another is possibly made of antler. They are carefully made and smoothed, and the six that came from the occupation and floor of house C-8/13 and the two that came from a historic period pit (Wray No. 4) have an ovoid cross section. The one from pit A-22 is nearly round in cross section. The length ranges from 1.1 to 2.2 inches and the width ranges from 0.3 to 0.6 inch. These artifacts, which are com-

mon in the Heally complex (e.g., Fisher B) have been called gaming counters because of their particular context at the Fisher site. In three Fisher B burials, groups of three, four, and seven counters were found neatly stacked on small rectangular or celtiform stones (Griffin 146:60; Langford 1927). The celtiform stone or tablet has not been found at the Zimmerman site.

Worked Bone

The anterior section of a beaver mandible with incisor intact had a wide notch on the distal and lingual side. It was found in a historic period storage pit, A-22.

ANTLER ARTIFACTS

Spear Point

A large antler tine was found in house C-8/13 with a conically reamed base and an unworked surface (Fig. 18p).

Projectile Points

Seven antler tine tips had hollow bases and smooth or polished surfaces. They were apparently arrow heads. The length ranges from 1.7 to 3.5 inches (43 to 91 mm). (Fig. 18r).



Fig. 19—Modified elbow pipe of soft limestone. Heally complex (?).

Antler Tines

Both small and large antler tines were encountered. There were 12 small tines. The three that came from the Heally component were polished and had squarely trimmed bases. These were probably antler arrow heads in process. The others were little modified except for a few that showed scars on the tips. These latter may have been small flakers. Four large antler tines were found that had little modification except for scars on the tip.

Worked Antler

Other examples of worked or used antler were encountered: one roughly cut tine (Fig. 18o) and an antler with three used tines were found. The excavations also yielded a cut stump of deer antler joined to the parietal. All of these examples are from the Heally component.

SHELL ARTIFACTS

Spoons

Three spoons were found with a single notch on one side of the hinge (Fig. 17A). They were made from valves of *Lampsilis ventricosa* and were found in the occupa-

tion of house C-8/13. Another spoon from a valve of *Lampsilis ventricosa* had at one side of the hinge a double notch that left a tang. This spoon and the one illustrated were found together in a storage pit, C-8g in house C-8/13.

Hoe

A valve of *Actinonaias carinata* was made into a hoe. It was a heavy shell about 0.2 inch thick and had a hole about 0.4 inch in diameter. The lip of the shell was greatly worn. The hoe was found on the floor of house C-8/13.

Pendants

A tooth-shaped ornament (Fig. 17B) was made from the thick portion of a shell. It had an oval cross section about .4 inches wide, a hole in the upper rounded end, and three parallel engraved lines encircling the pendant just below the hole. The drawing is slightly oversize. It was found in pit, C-6.

Two spade-shaped pieces of shell were located in a historic period refuse pit, A-6. These ornaments which are no longer in the collections were said to consist of about one fourth of the entire shell and to have the stem located at the hinge end.

CHAPTER IX

THE EUROPEAN TRADE GOODS

European trade goods were found in 35 localities that included six burials, the fill of at least 30 pits, and a number of instances in a general occupation area. Trade goods were found in all four types of storage pits. A list of trade goods is provided in Table 12. Most of the features containing trade goods were in or near Grid A; only five were in Grid B, two in C, and two in D.

The beginning of the penetration of trade goods into the Illinois Country probably began about 1665 when small amounts may have filtered in from Chequamegon Bay on the southern shore of Lake Superior. By 1674 there were two French traders among the Kaskaskia on the Illinois and in the same year several Kaskaskia were actively engaged in bringing French goods

from Green Bay to the Illinois Valley (Temple, 1958). But despite these activities European goods probably did not become very plentiful in the Illinois Country until LaSalle's establishment of Fort Crevecoeur in 1680 or even until Fort St. Louis was established in 1683 and the Grand Village of the Kaskaskia began to be re-occupied. From that date onward the Indians on the Illinois River were undoubtedly never without a source of supplies, however meager it may occasionally have been.

The most readily datable of the trade goods are the glass beads (Fig. 20D,E). Arthur Woodward (Letter to Dr. John C. McGregor, October 21, 1947) stated, in reference to the material from the Zimmerman site, that . . . "The seed beads may

TABLE 12
THE FREQUENCY AND DISTRIBUTION OF EUROPEAN TRADE GOODS

Item	Number of Occurrences	Feature Association
Seed beads, blue glass	71	A-6, 10, 22, 27, 40. Burial 2, C-3g.
Seed beads, red glass	1	A-10
Large beads, blue glass	3	Burials 2, 22. Survey pit 3.
Glass tube bead	1	Burial 2
Glass bottle top	2	Surface
Glass bottle base	1	Surface
Kaolin pipe bowl (?), fragments	1	A-27
Double-wire brass coil ornaments	16	Burials 2, 3, 6-9, 14.
Double-wire brass fragments	12	A-6, 10, 16, 20, 32. Ba-3. B-5. C-3g.
Brass wire ornament	1	A-36
Copper or brass janglers or tinkling cones	7	A-4, 16, 20. B-3, 6. C-8?
Copper or brass rolled tubular beads	3	Wray no. 10
Sheet copper or brass fragments	24	A-4, 6, 10, 12, 16, 20, 22, 32, 36, 38, 40. Ba-3. B-1. C-3g
Iron clasp knife blade	1	Surface, Grid A
Iron knife fragments	5	A-4, 10, 36. C-3?, 4
Iron knife blade tip	1	Wray no. 2
Iron nails	6	A-10, 34. C-8?
Iron ax heads	3	Wray no. 5, 9.
Iron awl (?)	1	Wray no. ?
Unidentifiable iron fragments	22	A-4, 6, 10, 16, 18, 19, 22, 25, 27, 34, 38. Ba-4. C-3g

Note: Some of the trade goods can no longer be found and a precise tally is no longer possible.
Based on Keller, 1949:48; Bauxar, 1953:42; MacNeish, 1945; Orr, 1947; the Wray Collection; and notes in the Illinois State Museum.

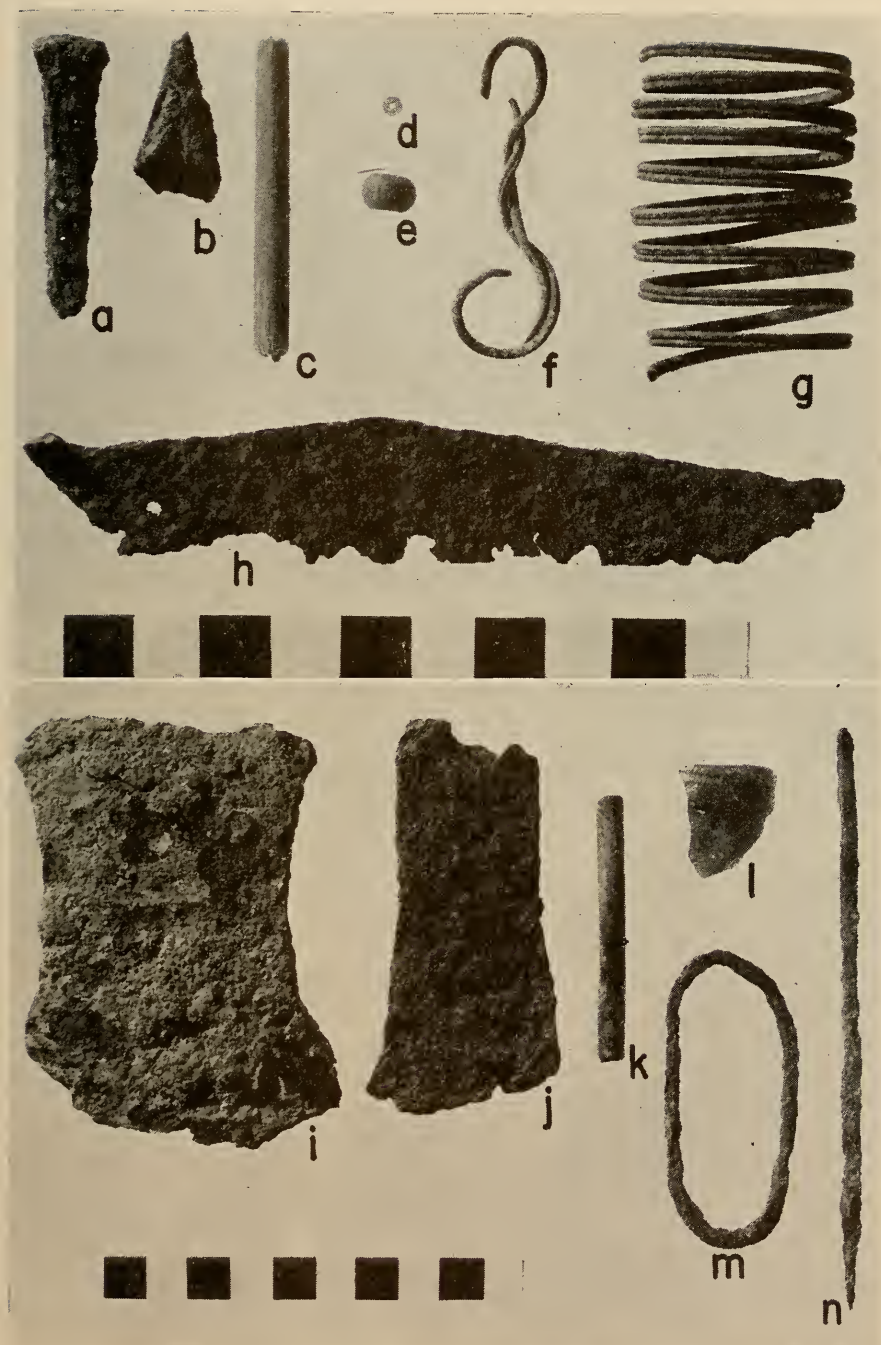


Fig. 20—European trade goods: a, nail with square cross section; b, brass or copper tinkling cone from pit A-20; c, extruded blue glass tube (bead?); d, blue glass seed bead; e, large blue glass bead; f, ornament made from brass or copper wire with a B-shaped cross section; g, brass or copper wire coiled hair ornaments with a B-shaped cross section; h, French iron clasp knife (without a touch mark); i, j, iron ax heads; k, brass or copper rolled sheet tube (bead ?); l, glass bottle top; m, iron ring; n, iron awl.

occur in the 17th century. They were not so plentiful in certain regions, but in areas where the beads were used for decorating garments they occur . . . well toward the early part of the 17th century. There were various sizes of seed beads. Those of the French type, so called, were used a great deal in England during the time of the Stuarts, and there was a revival in the Americas during the early part of the 19th century of the very finest of these beads." The larger, light blue beads, which have flattened ends (Fig. 20E), have had a less definite history.

Of the beads found at Zimmerman the large and small blue glass beads were specifically singled out by Tonti in a list of trade goods drawn up in 1693 (Pease and Werner 1934:281). By 1702 there were other types of beads that were being carried into the Illinois Country (Thwaites 1896-1901:66:29-31) so that it is undoubtedly significant that some of the diagnostic beads such as the Bristol bead and the dark blue faceted bead found at Starved Rock are not found at Zimmerman (Hagen n.d.).

The other distinctive artifacts are the iron knife blades (Fig. 20H), one of which

was found in the excavation with a lug suggesting the clasp knife of the French type (Keller, 1949:90), and the brass "double-wire" ornaments. The double-wire was made by folding over the sides of a long strip of sheet brass towards the center, thereby giving it a B-shaped cross-section (Fig. 20G). This wire type, which seems to be uncommon in archaeological sites, was usually found made into spring coil ornaments, and in three burials these ornaments were located in the ear region. DuPratz (Quimby, 1957:139) in the early eighteenth century described coil ornaments as being used as earrings by the Natchez. The same wire seems to have been used in the ornament (Fig. 20F) and constitutes the fragments that have been found.

Unfortunately, the trade material can only serve as a very general time indicator, but the fact that only a relatively few categories are represented and the quantity is not great definitely supports a late seventeenth century date. Hence, the date as well as the character of European trade goods at the Zimmerman site confirm its identification as the Grand Village of the Kaskaskia.

CHAPTER X

BURIALS*

A total of twenty burials had been noted up to the end of the 1947 excavation. All of the burials that are precisely located have been found in either Grid A or D. Extended, flexed, and bundle burials are represented. Most burials probably belong to the early historic period judging from the associated grave goods or their stratigraphic location. Unfortunately, few burials had any grave goods and only two burials were associated with a diagnostic aboriginal artifact. Only four burials seem to be prehistoric and these probably belong to the Heally Component. The position of Burial 5 and the burials in Grid D is recorded in Figure 21.

Burial 1

One burial, which was not precisely located, was found by a local resident, Mr. Scidmore, who reports to have found it protruding from the river bank after the spring flood of 1944. He retrieved a skull and a *Danner Grooved Paddle* pot (Fig. 13A) (MacNeish 1945).

GRID "A" BURIALS

Burial 2

This burial was excavated by Tucker and MacNeish who found it eroding out from the west bank of the small inlet that borders Grid A. The burial was of a supine, flexed child in a bell-shaped pit that contained blue grass beads of seed and ball-bearing size, a glass tube, and six double-wire coiled brass ornaments (Fig. 20), shells, and one shell-tempered sherd with incising over cordmarking (not seen, J.A.B.).

*This chapter is an adaptation of a paper written by Robert L. Shalkop (1947) entitled "Burials Ls*13". Important additions have been made by Bauxar (1953) and especially by Dr. Georg K. Neumann who has contributed a preliminary analysis of the skeletal remains.

Burial 3

Another child burial that was exposed by erosion on the river bank was found by J. C. McGregor (Illinois State Museum), R. S. MacNeish, and G. H. Smith (University of Chicago) when the site was re-examined on November 17, 1945. It was about 18 inches deep and in extended supine position. The age was estimated at 5 years. The state of preservation was fair, though the skull and pelvis were partly crushed by the weight of the soil. Around the neck area were numerous glass beads, which have not been described. At each ear region was a double-wire coiled brass ornament, which left green stain on the skull above each auditory canal. Adjacent to this burial but not in association with it were found fragments of an adult cranium which had possibly been removed by previous visitors (Smith 1945).

Burial 4

A fragment of an adult skull was found with other objects in an ordinary refuse pit (A-36), type B. The principal content was wood ash thrown in from elsewhere, but not from the adjacent intrusive fire pit (A-34). No other human remains were found here; but in association with the skull fragment were copper fragments, a piece of an iron knife, and scattered animal bones. This is probably a Danner component pit.

Burial 5

A burial of an adult, male Indian aged about 42 was found in A-35 (8164). The skull has been typed by Neumann as "Walcolid". The skeleton was in excellent condition and fully extended on its back. It was deposited in an ovoid pit having an opening of 63 by 24 inches and a depth of

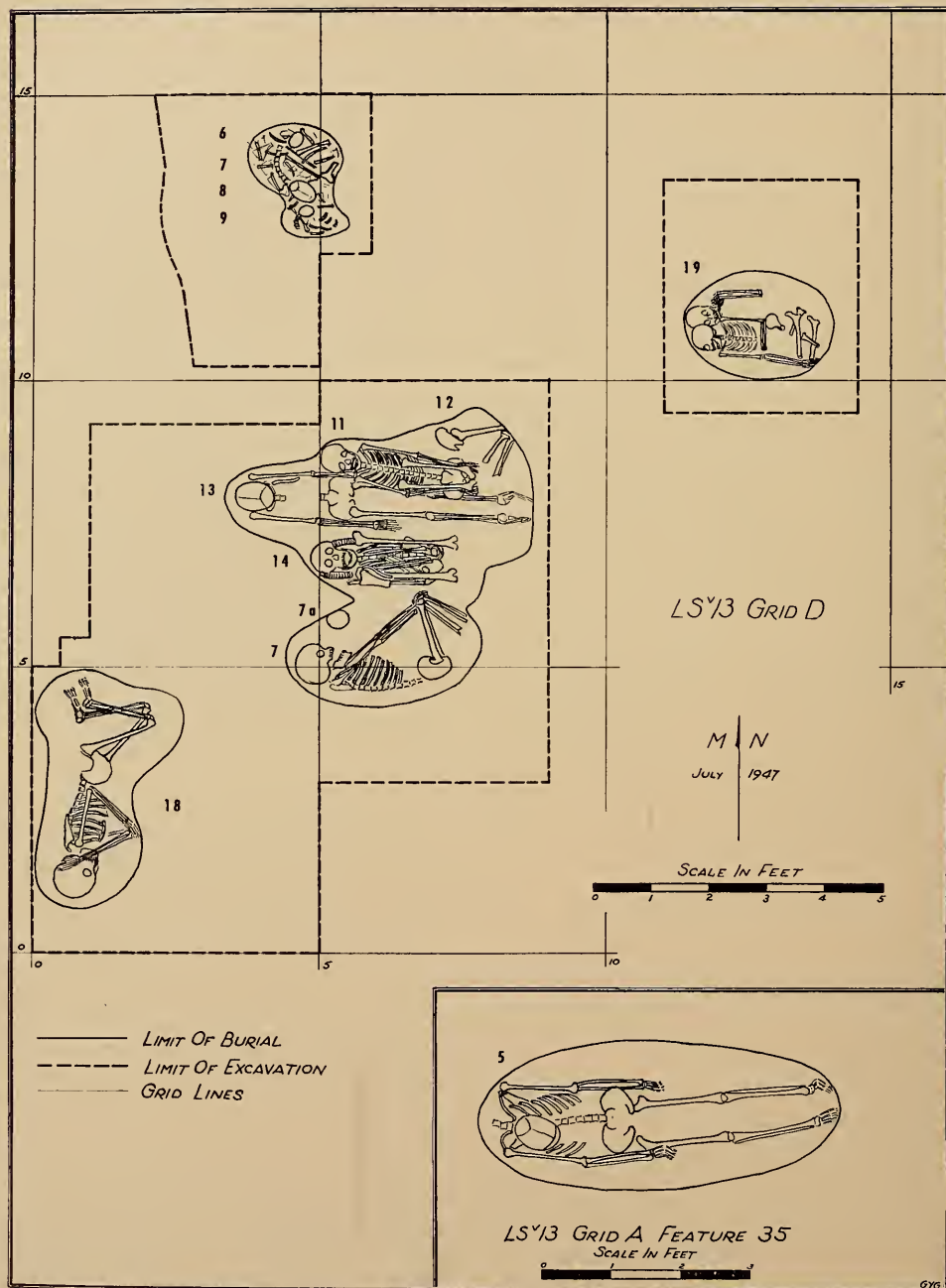


Fig. 21—Burials from Grid A and Grid D.

44 inches below the surface. The walls were nearly vertical and the bottom was decidedly concave. The pit was too short to receive the body fully extended, and the head apparently was rested against the wall of the pit well up above the floor since the skull was found slumped forward into the sternum. The arms were straight and at the sides with the fingers of the right hand curled under, and the foot bones had fallen down onto the insteps (Fig. 21). The position of the skull, fingers, and toes shows that decomposition has taken place before the grave was filled. No grave goods were present except for a fish spine with small bones intact near the left ear. A slight indication of weathering on the bones, which was noted in the field, was interpreted as indicating an open burial. The burial, however, was undoubtedly not completely open, and it seems likely that a shed was erected over the grave (Bauxar 1953). This burial either dates to, or slightly later than, the Danner occupation.

In the early historic period a shed-like structure over a grave is recorded by Deliette (Pease and Werner 1934:357-8) among the Iliniwek. He found that—"They hollow out the earth to the length of the body and a little wider. They put in a board from one of their old boats or canoes and put the dead body inside with another board on each side. . . Then they replant one of these forked sticks a foot from his feet and the other at the same distance from the head with the cross-piece above, after which they set their stakes in d'anse on each side, taking care to close up both ends well so that no animals may get in." (Pease and Werner 1934:357-8).

HISTORIC GRID "D" BURIALS

Burials 6-9

Several disarticulated skeletons were found in what was more of a midden area rather than a definable pit (D-3). There was one adult (9266A), two children (9266B, 9266C), and one infant (9266D). The adult was male, about 47 years old, and of "Lenapid" type; the first child was

about 12 years old; the second child was 28 months old; and the infant was new born. The skulls of the infant and the second child were crushed in place, possibly by a plow. Mixed with the skull fragments were two double-wire brass coil ornaments. The midden area in which the burials were found extended several inches below the plow zone and contained refuse and 23 *Langford Plain* sherds.

Burial 10

This was a partially uncovered burial (D-9). The skeleton seemed to have belonged to a young individual who was placed in a semi-flexed position with the legs together and the knees upward. The position is unique to the site, but if the rest of the skeleton was articulated, it can only have been oriented similarly to the others. The pit was intrusive into a Healy midden and extended 30 inches below the surface.

Burial 11

A burial (D-4) of a male 40 years old (8550) was found flexed on its back with arms at sides and legs drawn up on the chest. The skull was typed as "Walcolid". Missing feet and lower leg bones were probably the result of disturbance by rodents. A split in the left parietal suggests the work of a metal axe. There were no grave goods.

Four burials (11, 12, 13, and 14), though dissimilar, were found in one communal pit of irregular outline measuring a maximum of 5 by 3.5 feet and varying in depth from 20-25 inches. They possibly belong to a historic component.

Burial 12

A partial burial (D-4a, 8753) found near the left elbow of Burial 11 consisted of a broken left pelvis, and both patella, femurs, tibiae, the fibulae of an adult whose legs were flexed. Burial 11 seems to have been interred after Burial 12. There were no grave goods.

Burial 13

This burial (D-5) was that of an extended female 46 years old (8754) whose upper body was raised slightly and head

had fallen forward onto the chest (cf. Burial 5). The skull was typed as "Walcolid" and the skeleton was complete except for several vertebrae and ribs, the absence of which was attributed to a large rodent burrow that passed through the thoracic region. Missing bones from other burials can probably also be traced to similar rodent activity.

Burial 14

A bundle burial (D-6) of a 32-year-old male (8605) that occupied a position comparable to that of Burial 11 was found to the north. The skull was typed as "Lenapid". The skeleton was fairly complete: the femora were placed alongside the skull, which was facing upwards, and the other long bones, hand and foot bones, vertebrae and ribs were present. The bundle was very compact. Orientation was the same as the others, with the head to the west. With this burial were six double-wire brass hair ornaments, three on both sides of the skull. It seems that this may have been a scaffold burial with later interment. Such burials were recorded for the Iliniwiek (Thwaites 1896-1901:66-167) and were very prevalent in the Great Lakes Region in historic times.

BURIALS OF UNCERTAIN AFFILIATION

Burial 15

D-7 was burial of an incomplete skeleton of a 44-year-old female (8755), who has been typed as "Lenapid". This skeleton was lying on its left side with femora at right angles to the trunk, lower legs flexed, and arms straight with hands at knees. The soil enclosing this burial was a mottled brown color with a thin midden layer at the one-foot level separating it from the dark topsoil. The skull of this feature was only 14 inches from the surface and the approximate pit dimensions were only 2 × 3.5 feet, just large enough for the body. There were no grave goods.

Burial 16

D-7a consisted of a fragment of an infant calva (8756) that was found under the skull

of Burial 15. Careful search revealed no additional parts.

Burial 17

D-10 consisted of another burial pit at the edge of D-7. It was less than two feet to the southwest, but lack of time left this unexcavated except for a portion of the flexed lower limbs.

PRECONTACT (HEALLY?) BURIALS

Burial 18

D-2 was a primary burial of a semi-flexed, female (8757), 45 years old and of "Lenapid" type. The skeleton lay on its right side with femurs flexed slightly forward and feet pulled up to knee level; the right arm was tightly flexed in front of the body at shoulder level with the hand resting on the left side of the skull; the left upper arm was by its side with the forearm flexed at a slightly acute angle in front of the ribs. There was no evidence of disturbance and no objects were associated with the burial. The head was oriented towards the south, this being the only burial found which was not oriented east-west with the head towards the west. The burial pit averaged 28 inches in depth, and its maximum length-width dimensions were 48 by 33 inches.

Burial 19

D-8 consisted of two individuals, a child (8891) superimposed directly upon an adult female (8890). The female has been typed as "Lenapid". Both were semi-flexed but in poor condition and many bones were missing or broken. The adult skeleton was supine, its skull was resting on the left side, the right arm was extended by its side, the left flexed close to its side with the hand next to the left shoulder, and the partially missing legs twisted to its right and flexed at a right angle to the trunk. The child was also resting on its back, with its head on the right side, right arm extended by its side, left forearm crossed over the abdomen, and legs flexed to the body's right at a right angle. Both skeletons were oriented on an east-west axis with

the heads towards the west. There were no objects associated with the burial. Both hands, feet, and most of the lower body of the child were missing, as well as the right hand, both feet, and most of the trunk of the adult. The position of some of the broken leg bones near the edge of a well-defined pit make it impossible that the bodies could have been entire when buried, and the jagged breaks suggest intentional mutilation rather than secondary burial. The burial pit was a fair-sized, basin-shaped one measuring about 5 by 3.5 feet and extending from 14 to 42 inches below the surface. It was overlain by a Heally shell midden (D-1) found in Grid D covering this pit.

Burial 20

D-11 was a burial partially uncovered in excavating D-8. The burial underlay the same shell midden. Only the lower leg bones were uncovered.

BURIALS RECOVERED BY DONALD E. WRAY

Burial 21

This burial was found in an unspecified location (Wray No. 15). The skull is adult and seems to be female. There is no information on the disposition of the grave, but associated with the burial was a *Langford Trailed* vessel illustrated in Figure 8c. This is the only burial at the site that can be definitely associated with the Heally component.

Burial 22

This burial consists of two children found together in an undescribed and unlocated pit (Wray No. 10). There is no record of their disposition. Associated with these burials were three rolled sheet brass tubes (Fig. 20 κ) and one large blue glass bead.

SUMMARY

Most of the burials that have been uncovered and reported appear to belong to

the historic period. In this period there was a great variety of burial types, with extended, semi-flexed, and bundle inhumations being represented. However, there seems to have been some regularity since all the historic burials in Grid D were oriented east-west with the head towards the west. Two of the forms of burial encountered in the excavations could be correlated with ethnohistorical accounts. First, the extended burial that had been left exposed (Burial 5 and possibly 13) could be interpreted as a burial covered by a wooden shed. Second, the bundle burial (No. 14) can be referred to the scaffold type of burial. In addition, there was a situation which may have a historical explanation. Human skeletal material that occurred in the trash of the Danner occupation may have been one of the Iliniwek graves that were opened and scattered by the Iroquois in their famous raid of 1680 (Temple 1958; Hagen 1952, Parkman 1879).

The prehistoric burials are so few that little can be said. However, it is significant that the burial mounds which were found at the Fisher, Gentleman Farm, and Oakwood sites (Griffin 1946; Barth and Willis n.d.; Skinner 1953) have not been found on the Zimmerman site.

Dr. Georg K. Neumann has been able to type eight skulls. Most (5) were "Lenapid", a type associated with the historic Central Algonkion which includes both the Iliniwek and the Shawnee (Neumann 1952, 1954). The remainder (3) of the skulls were typed as "Walcolid", a type found in great frequency in the Mississippian sites of Cahokia and the Spoon River region, which is generally foreign to the Upper Illinois Valley (Neumann 1952). The "Walcolid" skulls were limited to the historic period, a time when foreign genetic elements would more likely be expected.

CHAPTER XI

THE ECONOMIES OF THE HEALLY AND THE HISTORIC PERIOD COMPLEXES

The economies of the various prehistoric and historic inhabitants of the Zimmerman site seem always to have been part agricultural and part hunting and gathering. Yet, there were significant differences in the means of exploitation of the environment between the prehistoric Heally period and the early historic period.

In the Heally complex there is little direct evidence for agriculture (see Table 13). But the lack of direct evidence could be accounted for by the damp soil conditions in Grid C as well as by the way corn, for example, was prepared. In the historic period most of the evidence for corn comes from the roasting pits, which seem to have been lacking in the Heally component. There is, however, indirect evidence for some sort of stable crop economy since the Heally village seems to have been composed of substantial semi-subterranean houses. In contrast to the evidence for agriculture is the amount of information on hunting and gathering. Parmalee in Appendix I has pointed out the importance of various local fauna, such as mussels, fish, turtles, beaver, raccoon, skunk, and muskrat in the Heally diet. Shell fish and animal bone are even found in middens. A significant part of the faunal remains are from a large number of animals living in or near the river or along the bottom lands and ravines. The uplands are just as strongly represented in a large quantity of relatively few animals, such as the deer, elk, and turkey (Table 14).

Our knowledge of the economy of the Swanson complex is quite deficient since little faunal or floral remains were recovered in unmixed situations. What little can be attributed to this complex is most

easily interpreted in the same fashion as the Heally.

In contrast to the prehistoric complexes, the historic period complexes of Danner, Historic Heally, and Zimmerman had an economy with a decidedly different emphasis. On the one hand, there is ample evidence of agriculture in the form of corn, beans, and squash remains (Table 13). There even seems to be some proliferation in the preparation of cultivated products. Archaeologically there are the deep storage pits dating to presumably this period that were used to re-roast corn. Ethnohistorically, the Iliniwek had two kinds of corn, which was either roasted on the ear, boiled in kernel form, or dried and threshed depending on the time of the year. (Pease and Werner 1934). In this same period other specialized features occur. One is a macopin (?) roasting pit which may indicate a more intensive exploitation of the local flora. There is evidence in this period of nut and fruit gathering both in the archaeological record (Table 13) and in the ethnohistorical record (Hagen 1952). All of the major plant associations were probably exploited in some way, and it is interesting to see the way the charcoal found in some of the roasting pits reflects the different surrounding plant communities. The upland forests are represented by the great quantities of oak wood and some hickory. The bluffs are represented by the red cedar, the bottom lands by the willow and walnut, and the canyons by the beech wood (Burcaw, 1947; Starr and Merrill, 1947; Sauer, Cady, and Cowles, 1918).

The main difference between the prehistoric and historic peoples of the Zimmerman site is in the relative amounts of mam-

malian species hunted (Table 14). The frequency of bison in the faunal remains begins to approach that found in Plains sites and it undoubtedly reflects the historic Indian's great interest in the communal hunting of these animals. With the rise in the percentage of bison there is a decline in the percentage of deer, but the frequencies of other mammals remain about the same. The dog, for instance, occurs in relatively large amounts in both the Heally

and the historic periods. The amount of dog bone is probably a reflection of the practice of dog eating, which is corroborated by ethnohistoric sources (Thwaites 1896-1900:67:171). Although dog feasts are alluded to, there is little evidence at this site of special handling of the bones. Only one mandible out of ten that came from a Danner pit (A-32) shows cut marks on the ventral margin which may be evidence of special handling. With greater interest in

TABLE 13
DISTRIBUTION OF FOOD PLANT REMAINS*

PREHISTORIC REMAINS

HEALLY COMPLEX

Zea mays (L.) 25 seeds (Ba-12), low-rowed, crescent seeded eastern flint corn, with some apparently softer and perhaps flour influence. This sample probably represents a cache of corn on the cob; a few unidentified charred kernels (A-7); an uncertain number of grains (A-8), (C-8, fill); one grain (C-2a).

SWANSON COMPLEX

Zea mays (L.) 6 cob fragments (B-14), of Northern Flint variety; one stem fragment (B-9).

HISTORIC REMAINS

DANNER COMPLEX

Zea mays (L.) 26 grains (A-36), flint corn, probably 8-12 rows, which has a suggestion of Southwestern influence; 21 grains (Ba-4), 8-10 row flint corn. However there appears to be some flour corn since a few grains seem to have been from ears with more rows, perhaps 14. The grains in general suggest a relationship with eastern groups, but the sample is too small and the grain too fragmentary to always be certain of type; one cornstalk fragment (Ba-3); unspecified amount (A-40).

Phaseolus

vulgaris (L.) 2 bean seeds (A-36), one large, the other probably from a string bean type of plant; one seed (A-38).

Nuts:

Juglans nigra (black walnut) one fragment (Ba-4).

Carya ovata (shagbark hickory)

2 shell fragments (Ba-4); one shell fragment (Ba-3).

Fruit:

Prunus sp. (plum)

UNCERTAIN AFFILIATION (With Trade Goods Association)

Zea mays (L.) grains (A-16), probably 8-10 row flint corn.

Phaseolus

vulgaris (L.) One bean seed (A-22), probably string bean variety.

Cucurbita

pepo (L.) One squash seed (A-16), which seems to belong to either acorn or summer bush varieties.

Nuts:

Juglans nigra (Black walnut) one fragment (A-22).

Carya

illinoensis (pecan) (A-27).

Carya ovata (shagbark hickory) one fragment (A-22).

Corylus

americana (hazelnut) several fragments (A-22).

Fruit:

Prunus sp. (plum) one stone (A-27).

UNCERTAIN AFFILIATION (Without Trade Goods Association, but Probably Historic)

Zea mays (L.) about 200 grains and a few cob fragments (B-13), low-rowed Northern Flint variety. Large collection of unanalyzed kernels from Ba-11, B-7, and Wray no. 11. Another large sample of Northern Flint corn kernels and five cob fragments (Survey No. 4) collected by Bluhm and Fenner is analyzed in Appendix II.

*This table is based on the papers of Messenger (1947) and Starr and Merrill (1947) with additions from the notes in the Illinois State Museum. Most of the identifications were made in 1947 by Dr. Hugh C. Cutler, then of the Chicago Natural History Museum, whose efforts have been greatly appreciated.

TABLE 14
COMPARATIVE PERCENTAGES OF MAMMALS RECOVERED FROM THE HEALLY AND THE
HISTORIC PERIOD COMPONENTS

	Deer	Elk	Bison	Dog	Beaver	Raccoon	Others	Total Mammals
Heally component	63	10	2	10	6	6	3	100
Historic period components	26	9	38	17	4	1	5	100
Unaffiliated material	42	13	8	14	8	10	5	100

communal hunting there was less interest in local and more marginal food sources. The collecting of shell fish, the hunting of small animals, and fishing became only a minor part of the economy (Appendix I). It is significant that this selectivity is mentioned in the ethnohistorical sources. According to Rale, who was speaking of a period after the abandonment of the Starved Rock area, "they (the Iliniwek) take little trouble to make nets suitable for catching fish in the rivers, because the abundance of all kinds of animals which they find for their subsistence renders them somewhat indifferent to fish" (Thwaites

1896-1900:67:269:71). When the Iliniwek wanted to catch fish they were said to shoot them from a boat (Thwaites 1896-1900:67:171). It is significant that bone fishhooks were neither encountered in the Heally complex nor in the historic period complexes. The greater interest in communal hunting presumably resulted in less stability in the village, and it is this relative instability that may be reflected in the houses. Those of the prehistoric period were substantial semi-subterranean houses, whereas those of the historic period were lighter wigwams.

CHAPTER XII

THE CULTURAL COMPLEXES OF THE ZIMMERMAN SITE

The Heally Complex

The Heally complex is a prehistoric and relatively homogeneous complex that makes up over 75% of the 1947 expedition collections. It is similar enough to the Fisher and Plum Island type of Upper Mississippi to have been grouped into the Fisher Focus (Wray 1952; Quimby 1960) or the Langford Sub-culture (Deuel 1958). The Heally complex is characterized by a village composed of square pit houses of "double-walled" or wall trench construction that are surrounded by storage pits and shell middens. The pottery is made up of two wares. The dominant of the two is tempered with a distinctive, black, angular grit and the lesser of the two is shell tempered. The grit tempered, Langford ware, is mainly smoothed surfaced and olla-shaped. Lugs sometimes occur at the Zimmerman site, but true handles have yet to be found. Surfaces are mostly undecorated, but when decoration occurs it consists of trailed chevrons and meanders and is usually executed with a wide instrument. The most characteristic shell-tempered type is *Heally Trailed*, which is cordmarked and decorated like the grit-tempered pottery. The chipped stone artifacts consist mainly of triangular projectile points and bi-convex scrapers of both finished and "hump back" varieties. A medium sized stemmed point is a distinctive part of the assemblage. The other stone artifacts are made up predominately of celts, milling stones, and hammerstones. Bone and antler artifacts are relatively common and are composed mainly of socketed antler points, bone awls, bone beamers or hide fleshers, gaming counters, and engraved pendants. Shell spoons and a hoe make up the important shell artifacts. The economy is a mixed one of agriculture and hunting and gather-

ing in which local fauna and flora of the river, the bottomlands, and the upland forests and savanna play a central role. A trait list appears in Table 15.

Although there are good reasons for assigning a prehistoric date to the Heally complex, there were three items of European manufacture that were found in the house pits. Because of this material, the Heally complex was thought at first to be almost entirely historic (Orr, 1949a). However, in each case the association is suspect (Orr and McGregor, 1947; Orr, 1949b). A fragment of an iron knife blade was found in house C-3 about 6 inches above the floor and at a depth of between 6 to 12 inches below the surface. But there were two historic period pits (C-3g, C-4) that intruded into the house, and it is quite likely that rodents had brought these artifacts down since they were not resting on the floor. In house C-8/13 an iron nail and a tinkling cone were found near the floor but were in the vicinity of an intrusive pit whose sides could not be clearly delineated and in an area where crayfish and rodents were active.

The tenuousness of the association is reflected in the small number of trade goods in apparent association with the Heally component. In comparison with Grid A the incidence of trade goods in Grid C is in marked disproportion to the total number of artifacts. In Grid A and the neighboring bank, 46 features had a total of 446 sherds and over 40 trade items whereas in the Heally component of Grid C, 15 features contained a total of 8,544 sherds and possibly 3 trade items. The large number of sherds in the Heally component is mostly due to there being at least four houses and possibly parts of five more. It would seem that even if the associations are good, the

TABLE 15
TRAIT LIST OF THE ZIMMERMAN SITE COMPLEXES

	PREHISTORIC COMPLEXES		HISTORIC COMPLEXES			
	Heally	Swanson	Danner	Historic Heally	Zimmerman	Uncertain
STRUCTURES, PITS, AND MIDDENS						
Houses, semi-subterranean, with wall trench	2					
Houses, semi-subterranean, with "double wall"	1					
Rockpile (sweathouse ?)			1			
Storage pit type A				3	2	3
Storage pit type B	3	2	5	4		
Storage pit type C	4	2	3	1		
Storage pit type D	4		3			
Roasting pit type A	1?					
Roasting pit type B			4	1		
Macopin (?) roasting pit			1			1
Corn roasting pits				1		3
Middens of bone and shell	2					
SUBSISTENCE						
Corn	X	X	X	X		X
Beans			X	X		
Squash				X		
Number of wild plants			3	5		
High quantity of bison bones			X	X	X	X
Very high quantity of deer bones	X	X?				
High quantity of shellfish	X					
POTTERY						
Langford Plain	X			X		
Langford Trailed (Plain Surface)	X			X		
Langford Cordmarked	X					
Langford Trailed (Cordmarked Surface)	X					
Grand River incised (?)	X					
Heally Trailed	X					
Swanson Smooth		X				
Swanson Cordmarked		X				
Danner Grooved Paddle			X			
Danner Cordmarked			X			
Plain shell tempered (Oneota ?)					X	
Pottery disk					1	
CHIPPED STONE ARTIFACTS						
Projectile points, small triangular	40	2	12	13		
Projectile points, large stemmed	1					
Projectile points, small expanding stemmed			2			
Knife, stemmed	1					
Knife, triangular	1		1			
Drills, expanding base	9					
Drills, cylindrical	1					
Drill, side notched						1
Graver	1					
Scrapers, bi-convex finished	5		2			
Scrapers, bi-convex "hump back"	5	1	3			
Scrapers, plano-convex snub nose	2		1	2		1
Scrapers, plano-convex bi-facially worked	5					
Scraper-knives, bi-convex	6					
Scraper-knives, used flakes	151	1	18	8		
GROUND AND POLISHED STONE						
Pipe, modified elbow	1?					
Celts	4					
Shaft smoothers, single groove				2		
Shaft smoothers, multiple groove	1	1		1		
Abrader, multiple groove	1					

TABLE 15 (Continued)

	PREHISTORIC COMPLEXES		HISTORIC COMPLEXES			
	Heally	Swanson	Danner	Historic Heally	Zimmerman	Uncertain
Milling stones, one flat side	1	1				
Milling stones, two flat sides						1
Mano	1					
Hammerstones	9	1				
Pitted stones	3					
Crescent-shaped stone	1					
Whetstones	1		1			
Pendants	1					
Cup	1					
Paintstone	1					
Hematite	1					
Red ochre	X		X	X		
Worked slate	X					
BONE ARTIFACTS						
Awls	2					
Scapula pins	2					
Perforators	1					
Mat needles				2		
Projectile point	1					
Beamers	2					
Scapula hoe			1	1		4
Scapula spade			1			
Styliform bone ornament	1					
Tube				1		
Ring	1					
Disk	1					
Ball	1					
Pendants	2					
Dish	1					
Gaming counters	6			2		
ANTLER ARTIFACTS						
Spear point	1					
Projectile points	7			1		1?
Antler tines	11		3			
Worked antler	X					
SHELL ARTIFACTS						
Spoons, single notch	3					
Spoon, double notch	1					
Hoe	1					
Pendants	1			2		

number of trade items is more in accordance with a proto-historic date than a fully historic one.

However, there is evidence that the Heally complex is fully pre-historic. Trade sherds of *Cahokia Cordmarked* (Fig. 121, J) show a Trappist-Spoon River temporal connection and a minority amount of what is presumably *Grand River Incised* (Fig. 11H) points to early Oneota connections (Hall, 1960). Moreover, an indigenous pottery, *Langford Trilled*, shows close stylistic

connections with *Grand River Incised* in the frequent use of a horizontal meander on a plain surface.

The Heally complex is affiliated with a number of other sites with Langford pottery, such as the Fisher (Griffin 1946, 1948; Langford 1927, 1928b, 1930a), Plum Island (Kelly and Cole, 1931; Fenner n.d.), Oakwood (Skinner, 1953), Gentleman Farm (Barth and Willis n.d.), Kankakee River Refuse Heap (Langford 1919), and Robinson Reserve sites (Fowler 1952). The best

known site is Fisher where a well defined Upper Mississippi sequence has been found (see Chapter VII). The closest similarities of the Heally complex is with Period B at the Fisher site. The square pit houses are very similar, and the hemispherical and cylindrical storage pits and semi-flexed burials occur in both complexes. The lithic assemblages are similar in the frequencies of triangular projectile point forms and in the occurrence of stemmed points and the large number of both finished and "hump back" scrapers. Antler projectile points, antler flaking tools, bone beamers, gaming counters, scapula pins, single and double notched shell spoons, and shell hoes are some of the other items of similarity (Griffin, 1946, 1948; Langford 1927, 1928a, 1930b). However, there are a number of important differences. The Fisher Period B has burial mounds, discoidals, single grooved arrow shaft smoothers, copper tools, raccoon penis bone implements, beaver incisor chisel, and antler celts that are absent from the Heally complex. There are enough differences to indicate that the two complexes are not strictly comparable although the basic cultural pattern is the same. Most of the differences are probably chronological since they seem to have the same explanation in the Spoon River sequence (Wray, 1952:157-8). It is undoubtedly significant that the type *Langford Noded* occurs in Fisher B and in only the later part of the Heally complex which is poorly represented at the Zimmerman site. Furthermore, *Heally Trailed* which does not occur in Fisher B is a characteristic part of the early Heally ceramic assemblage, but not of later Heally (See Chapter VII). The distribution of these two types suggests that the early part of Heally is before Fisher B (see Table 16). The date of the Heally complex is roughly bracketed by the duration of *Cahokia Cordmarked* and *Grand River Incised*. Hall (1960:196) has estimated that the *Grand River Incised* lasted from ca. 1000 to 1500 A.D., and it seems likely that the early part of Heally falls at the beginning or the middle of this 500-year period.

The Swanson Complex

The most complicated of the areas investigated proved to be Grid B where sherds of Langford, Danner, and Oneota affiliation were found in generally mixed association with a highly distinctive pottery of the Woodland Tradition. Of the 19 pits that were excavated in and near Grid B only seven contained exclusively Swanson pottery (Table 8).

The pottery of the Swanson Complex is closely related to that of the early historic Tonti complex found at the Hotel Plaza site (Orr, 1949b). Outside of the Upper Illinois Valley, Swanson pottery has its greatest similarity to Terminal Woodland types to the northwest and northeast (cf. Quimby, 1960:90, 93), which fact might be taken as an indication of association with any one of a number of Central Algonkian tribes lying to the north of Illinois (e.g., Kickapoo, Potawatomi).

This complex is probably entirely pre-contact (see Chapter IV) since the only evidence of European trade is one tinkling cone and a possible gun flint occurring in a mixed situation. It probably dates to about the same time as the Heally complex since sherds of *Swanson Smooth* and *Swanson Cordmarked* were found in the Heally houses (Fig. 16).

The Danner Complex

The Danner complex, one of the historic period complexes at Zimmerman, is characterized by a distinctive ceramic assemblage that is unusual in Illinois and clearly affiliated with the Fort Ancient Aspect to the East. The resemblance is closest to the Madisonville Focus and Dr. James B. Griffin has suggested that after examining the Danner pottery that the Fort Ancient type names of *Madisonville Cordmarked* might be applied to the *Danner Cordmarked* pottery and *Madisonville Grooved Paddle* to *Danner Grooved Paddle* (Orr and McGregor, 1947). (See Chapter VII). However, while Danner pottery is essentially Fort Ancient in such specific details, such as hour-glass handles, tiny handles, and the use of two handles instead of four, the two complexes are distinguishable (see Chapter

VII). In fact, the ceramic differences as well as the other trait differences are probably the result of either temporal or geographic differences.

Despite the number of features attributable to the Danner component (25), there are relatively few artifacts that can be assigned to this complex. The only distinctive artifact seems to be the small expanding stemmed point. Other characteristic artifacts, such as the snub-nosed end scraper and the bison scapula hoe seem to be more typical of the historic period assemblages as a whole. (Table 16). The paucity of artifacts may be explained by the apparent availability of European-made objects rather than the lack of an adequate sample. The historic records do show that both European and aboriginal artifacts were in use at this time. Among the Illiniwek stone knives and daggers were recorded as being in use in 1687 (Thwaites 1896-1901:63:291) and Father Rale recalled that in 1692 "arrows are the principal weapons that they use in war and in hunting . . . If knives are lacking, they use arrows also for flaying the animals which they kill" (Thwaites 1896-1901:67:171-3). The great similarity in tools of this period

may be explained by the common economic orientation towards bison hunting.

A case for the indentification of Danner as Shawnee has been made by Bauxar (1953, 1957) that does not depend upon Griffin's (1943) tentative identification of the Madisonville Focus of Fort Ancient as Shawnee. According to Bauxar (1953:52), "LaSalle encouraged to settle near Fort St. Louis several groups of Shawnee which he identified by that name and by the name of Ouabano, Chaskepe, and Cisca. The group which he called simply Shawnee apparently came from the banks of the Ohio. The others he said came from the frontier of the English colonies and were in the habit of going to trade with the Spaniards in Florida. Franquelin's map of 1684, based to a large extent on information supplied by LaSalle, shows on the southern tributaries of a highly distorted Ohio river several villages, among them Cisca and Chaskepe, from which runs a trail to the Spanish missions in Florida with the legend 'Road by which the Kaskinampo (Koasati on the Tennessee River) and Shawnee go to trade with the Spaniards'. (Although) the Ohio and its tributaries are grossly misrepresented, it is evident from the position of

TABLE 16
CHART SHOWING THE SUGGESTED CHRONOLOGICAL RELATIONSHIPS OF THE
ZIMMERMAN SITE COMPONENTS TO NEARBY RELATED COMPONENTS

	LANGFORD Ceramic Tradition		Regional Late Woodland	Regional Fort Ancient	
Historic Period	Hitt component at Starved Rock	HISTORIC HEALLY	Tonti component at Starved Rock	DANNER	LaSalle component at Starved Rock
PREHISTORIC	Fisher Period C				
	Fisher Period 8 Gentleman Farm	HEALLY (Grid C sub-plow occupation and Houses C-14?)			
	Plum Island (in part)	HEALLY (Houses C-3 and C-8/13)	SWANSON		

the Cherokee towns on the Tennessee River that the two rivers upon or near which the Cisca and Chaskepe villages are situated are probably the Cumberland and either the Kentucky, Green, or Licking rivers. The last named river falls within the limits of the Madisonville Focus. (See Bauxar, 1957). Thus, the general geographical consideration is satisfied; and with the establishment of a post-contact date for Grid A and at least the Madisonville site of the Madisonville Focus, the temporal consideration is satisfied. Franquelin's maps of 1684 and 1688 show the Shawnee villages in the near vicinity of Fort St. Louis. Although there are discrepancies in the naming of these sites, on both maps is shown a Shawnee village across the river from the fort. On the earlier map the village is found at the mouth of Little Vermilion. The position apparently was corrected on the later map, the village being placed almost directly opposite the fort. This position is in close agreement with the position of Grid A." Final corroboration of the identification of Danner as Shawnee would lie in the locating of two Fort Ancient sites on the south side of the Illinois below Starved Rock. As yet, the only indication of other Shawnee sites has come from the vicinity of the Rock where two Fort Ancient components occur on the Rock (Ls^v12) and a few hundred feet south at the Hotel Plaza site (Ls^v36; Orr, 1949b). Another component is located on the Simonsen site (Ls^v15; Bluhm, personal communication).

The Historic Heally Complex

In Section One of Grid A and in Grids B and C there were 21 features that contained Langford sherds intermixed with historic pottery and European trade goods (Table 3). Unfortunately, the sherds as well as the other artifacts such as single grooved arrow shaft smoothers and bison scapula hoes are relatively undiagnostic and seem to be typical of the artifacts of the historic period. Hence, little can be said about this Heally manifestation with trade goods. Twelve out of eighteen features having Heally-type sherds (90% *Langford Plain*) contained trade goods mixed with

other types such as *Danner Grooved Paddle* and the Oneota-like pottery (Table 10). Since in four of these pits Langford-type sherds constitute over half the ceramic remains, it is highly likely that this is an indication of a historic Heally occupation. There are other indications of the contemporaneity of Heally-like, Danner, and European material. The large *Langford Trailed* sherd (Fig. 10A), which has a design of vertically incised lines, is atypical of Heally or Fisher B in the design. Such designs are often found on relatively late Oneota vessels (McKern 1945; Hall 1960), and one was found on a "Danner Thick" sherd (Fig. 15J). There is also negative evidence in the absence of clearly identifiable *Heally Trailed* or other early related types.

The Historic Heally complex seems to have been relatively important in the area in the historic period since sherds of Langford types were frequently associated with European materials on Starved Rock, not only in various mixed associations—notably in the fill of the French dugout, but also in one small, apparently undisturbed pit (Orr, 1949b; Hagen, n.d.). The complex at the Rock has been called the Hitt Focus.

The Historic Heally complex, which can be attributed to both the pre-1680 and 1683-1691 villages, is unfortunately poorly represented in the excavations at the Zimmerman site. The Heally complex can be most easily identified with an indigenous ethnic group, considering its constant occurrence in this area in pre-historic and early historic contexts. The best candidate is the Kaskaskia band of the Iliniwek, the group most closely associated with the Starved Rock area up to 1691 and one of the principal residents of the Grand Village of the Kaskaskia. However, the historic Heally complex could have been associated just as well with part or all of the Iliniwek bands and even some of the Miami bands which had only recently split away from the Iliniwek Confederacy (Temple, 1958).

It is equally possible, on the other hand, that the more southern tribes of the Iliniwek participated in a tradition with different ceramic affiliations. Wray and Smith

(1943, 1944) and Smith (1951) have argued for an identification of the Peoria with a late Oneota-like Mississippi; and Deuel (1958) and Griffin (1960) have argued for an identification of at least part of the Iliniwek with a late Middle Mississippi assemblage. In order to clarify the identification of the Kaskaskia band of the Iliniwek with the Historic Heally complex, an expedition was led by the Illinois State Museum to the site of New Kaskaskia in Randolph County, Illinois (Deuel, 1958). Although a great quantity of trade materials were recovered, only a few, relatively undiagnostic, shell-tempered sherds were found. Precisely how this evidence is to be reconciled with that from the Zimmerman site and Starved Rock is not clear at this time.

The Zimmerman Complex

The most poorly represented and understood manifestation found in work on the Zimmerman site has been the Zimmerman complex. It is represented by a small number of distinctive Oneota-like sherds that have been found with trade goods or with Danner pottery in Grids A, B, and D. (Fig. 14). These sherds have been generally found in "Historic Heally" features where plain shell-tempered pottery constitutes a large percentage (B-3, 5, 7, 15, Wray No. 4, 5; see Table 10). If this ceramic manifestation exists as a discrete component at this site and not as a trade type, it is undoubtedly historic. Too little work has been done at this site to warrant a judgment at this time. Associated exclusively with this pottery are two "bell-shaped" storage pits (type A) and one roasting pit.

SUMMARY

The excavation of the Zimmerman site (the location of the former Grand Village of the Kaskaskia), began with an explicit problem in mind: what were the archaeological complexes associated with the early historic tribes. Preliminary work at this site revealed that there were probably two historic archaeological complexes and that these two, Danner and Historic Heally, can be tentatively identified with a band of the

Shawnee and the Kaskaskia tribe of the Iliniwek Confederacy respectively. Unfortunately, a more definite identification cannot be made, in part because if the Historic Heally complex were left by the Kaskaskia, it should have been more extensive. However, this is not a permanent defect, but is one that can be resolved by more extensive excavation at this large and complex site.

Evidence of historic occupation was found throughout but was only predominate in Grid A. Excavation revealed five possible complexes. As many as three were historic and two were prehistoric. Of the prehistoric complexes the Heally is the best known and comprises over three-fourths of the material recovered from the site. It is an Upper Mississippi component, similar to Fisher B, that seems to date as early as A.D. 1300. The site was a village consisting of substantial, square, semi-subterranean houses. The pottery was mostly made up of olla-shaped vessels, (Langford and Heally types) that were both grit and shell-tempered and were both cordmarked and smoothed surfaced. The designs consisted mainly of curvilinear, trailed motifs. The remainder of the technology was represented by flint, antler, bone, and shell artifacts. The village was strewn with deep storage pits, and shell and bone middens (or garbage dumps). The economy was a mixed agriculture, hunting, and collecting, one in which local resources were intensively used.

The other pre-contact component was a Late Woodland complex called Swanson. It is poorly defined outside of its distinctive ceramics.

The best defined historic complex is the Danner component which represents an intrusive culture from the East that is of Fort Ancient affiliation. The pottery is shell-tempered and malleated with a cord-wrapped or grooved paddle. The vessels are jar-shaped and have distinctive hour-glass handles and notched, appliqued strips on the rim. The remainder of the technology is not well represented in the collections, but one distinctive artifact is a bison-scapula hoe with a central hole. In the Danner area of the site were found

storage pits, roasting pits, and a specialized macopin (?) roasting pit. The economy was one of mixed agriculture, hunting and gathering that differed from the Heally economy in the emphasis of bison hunting and in the neglect of shell fish collecting and small animal hunting.

One of the other historic complexes is the Historic Heally component, which is poorly defined. The pottery is the same as the prehistoric Heally except that the early shell-tempered types seem to have disappeared. Many of the other artifacts as well as the economy seem to have been the same as in the Danner component. The last historic complex is the putative Zimmerman component which is defined by a few Oneota-like sherds.

There is considerable difference between the prehistoric and historic assemblages and economies. On the one hand the prehistoric houses are substantial and semi-subterranean, storage pits are straight-walled, and shell is used for tools and

ornaments. There is balanced dependence upon agriculture, hunting, and shell-fish collecting. On the other hand the historic houses are probably not as substantial (to judge from historic records), storage pits are often undercut, and shells are infrequently utilized whereas bison scapulas are employed. Various roasting pits occur and there is a shift away from mussel collecting and small animal hunting towards bison hunting. Probably coincidental with this shift is one from individual hunting out of a stable base camp or village to seasonal communal hunting of migratory bison, a practice well recorded for the prairie tribes (Bauxar, 1959; Deuel, 1958).

These significant differences between the late prehistoric and the early historic complexes were not expected by the original excavators, but are ones that, nevertheless, are as fully important to our knowledge of Illinois prehistory as the site's association of aboriginal assemblages with European trade goods.

APPENDIX I

FAUNAL MATERIALS FROM THE ZIMMERMAN SITE (Ls^v13), LA SALLE COUNTY, ILLINOIS

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Bone and shell remains discussed in this brief report were recovered at the Zimmerman Site by archaeological crews from the University of Chicago and the Illinois State Museum in the summer of 1947. The site is located on the north bank of the Illinois River opposite Starved Rock; although it occupied the river terrace for approximately one mile, the maximum width probably did not exceed much more than 200 yards. Four major components have been recognized: Swanson (Late Woodland; Grid B); Zimmerman or Oneota (Historic; Grid B); Danner or Fort Ancient (Historic; Grid A), and Heally (Upper Mississippi; Grids C and D). Portions of the "late" Heally component are Historic and probably represent the culture of the Kaskaskias.

The faunal counts are broken down into a Heally, historic, and unknown categories. The historic comprises materials associated with trade goods or the Danner or Historic Heally components. The unknown includes a little material from other components and a large amount that could not be affiliated with any component. A major portion of the excavation work was centered in the western part of the site which was intensively occupied by the Heally (Upper Mississippi) complex. Consequently, the inequality of the samples must be considered when attempting to evaluate and compare the animal remains of the prehistoric Heally component with those of the historic. Also, considering the relatively short time span involved between the early Upper Mississippi cultures and occupation by historic groups, any noticeable change in the regional fauna would seem unlikely. Based on these data, however, at least one principal change—the apparent late coming of the bison—did alter the hunting practices and food economy of the historic tribes.

TABLE 17
FRESH-WATER MUSSELS RECOVERED AT THE ZIMMERMAN SITE,
Ls^v13, LA SALLE COUNTY, ILLINOIS. 1947.

Species	No. of Specimens	
	HEALLY	HISTORIC
<i>Elliptio dilatatus</i> , Spike	320	8
<i>Actinonaias carinata</i> , Mucket	290	9
<i>Elliptio crassidens</i> , Elephant's Ear	163	1
<i>Cyclonaias tuberculata</i> , Purple Warty-back	107	
<i>Ligumia recta</i> , Black Sand-shell	89	2
<i>Lampsilis ventricosa</i> , Pocketbook	89	11
<i>Pleurobema cordatum</i> , Small Niggerhead	32	2
<i>Plethobasus cyphus</i> , Bullhead	14	
<i>Quadrula metanevra</i> , Monkey-face	9	
<i>Ambleria peruviana</i> , Blue-point	5	3
<i>Ambleria costata</i> , Three-ridge	2	
<i>Proptera alata</i> , Pink Heel-splitter	1	
<i>Lampsilis siliquoidea</i> , Fat Mucket	1	1
<i>Lasmigona costata</i> , Fluted shell	1	
<i>Fusconaia undata</i> , Pigtoe		8
<i>Truncilla truncata</i> , Deer Toe		2
<i>Obliquaria reflexa</i> , Three-horned Warty-back		2
<i>Anodonta grandis</i> , Floater		1
<i>Lampsilis anodontoides</i> , Yellow Sand-shell		1

Nineteen species of fresh-water mussels were identified and, with but one or two exceptions (e.g. *Amblema costata*) all are typical of the naiad complex of the Illinois River. Nearly 90 percent of these shells, and all but 5 species, were recovered in the Upper Mississippi Heally component of the site; in several instances mussel valves comprised almost the entire content of the refuse pits. A small quantity of shell was found in the historic components of Starved Rock

(Ls^v12) as well as in like components of the Zimmerman site, thus indicating that mussels were utilized by the historic groups. Taking into account the larger sample of material from the Heally component, it is still apparent (Table 17) that the earlier Upper Mississippi people used the river mussels far more extensively than did the historic Indians of the Starved Rock area, both as a food and for the manufacture of artifacts, such as shell spoons.

TABLE 18
VERTEBRATES RECOVERED AT THE ZIMMERMAN SITE,
Ls^v13, LASALLE COUNTY, ILLINOIS, 1947.

Species	No. of Remains			
	HEALLY	HISTORIC	MIXED OR UNKNOWN	
White-tailed Deer, <i>Odocoileus virginianus</i>	307	78		52
Elk, <i>Cervus canadensis</i>	48	28		16
Dog, <i>Canis cf. familiaris</i>	47	51		18
Beaver, <i>Castor canadensis</i>	28	11		10
Raccoon, <i>Procyon lotor</i>	28	2		12
Bison, <i>Bison bison</i>	11	113		10
Striped Skunk, <i>Mephitis mephitis</i>	10	3		3
Muskrat, <i>Ondatra zibethica</i>	8	2		1
Woodchuck, <i>Marmota monax</i>	2			1
Domestic Horse, <i>Equus caballus</i> *		10		
Black Bear, <i>Ursus americanus</i>		8		
River Otter, <i>Lutra canadensis</i>		3		
Mountain Lion, <i>Felis concolor</i>		1		
Cottontail, <i>Sylvilagus floridanus</i>				1
Turkey, <i>Meleagris gallopavo</i>	9	3		2
Duck spp.	2			2
Canada Goose, <i>Branta canadensis</i>	2			1
Coot, <i>Fulica americana</i>	1			
Mallard, <i>Anas platyrhynchos</i>	1			
Double-crested Cormorant, <i>Phalacrocorax auritus</i>	1			
Goose sp.				1
Turtle, <i>Pseudemys</i> , <i>Graptemys</i> , <i>Emys</i> , group	32	42		6
Soft-shelled Turtle, <i>Trionyx</i> sp.	31	2		
Snapping Turtle, <i>Chelydra serpentina</i>	8	6		7
Turtle spp.	8	3		6
Blanding's Turtle, <i>Emys blandingii</i>	20			1
(10: same carapace)				
Pond Terrapin, <i>Pseudemys scripta</i>	3			
(same carapace)				
Box Turtle, <i>Terrapene</i> sp.	2			
Map Turtle, <i>Graptemys geographica</i>		2		1
Fresh-water Drum, <i>Aplodinotus grunniens</i>	42	13		20
Channel and/or Blue Catfish, <i>Ictalurus</i> sp.	22	7		18
Redhorse, <i>Moxostoma cf. carinatus</i>	11	1		6
Buffalofish, <i>Ictiobus</i> sp.	8	1		3
Buffalofish and Suckers, <i>Catostomidae</i>	5	2		2
Bullhead, <i>Ictalurus</i> sp.	4			2
Gar, <i>Lepisosteus</i> sp.	3	2		2
Flathead Catfish, <i>Pylodictis olivaris</i>	2			
Sturgeon, <i>Scaphirhynchus</i> sp.	1	1		
Bowfin, <i>Amia calva</i>	1			1
Bass, <i>Micropterus</i> sp.				2
Walleye, <i>Stizostedion</i> sp.				2
Northern Pike, <i>Esox lucius</i>				2
Sucker, <i>Catostomus</i> sp.				1

*These bones were recovered from the river and probably do not belong with the aboriginal remains.

On the basis of this sample, it appears that the lower vertebrates (fish, turtles) were taken in greater numbers by the Upper Mississippi peoples than by the later groups (Table 18). A minimum of 13 species of fish and 6 species of turtles were represented, remains of the former being especially more numerous in the prehistoric components of the site. Bones of the freshwater drum and catfish (*Ictalurus* spp.) comprised 65 percent of the total of the identified fish. Surprisingly, birds were poorly represented (5 species, 24 bones) and, as a group, were of little or no significance to any of the Indians occupying the Zimmerman Site.

Mammals were probably more important as a source of food to all groups once inhabiting this area than the other species of vertebrates combined. Fourteen species were represented, with bones of the white-tailed deer and bison being the most numerous and constituting approximately 62 percent of the total identified mammal remains. Probably the most noteworthy

aspect of the faunal materials from this site is the predominance of bison bones in the historic components, with their almost complete exclusion from the prehistoric components. This situation at the Zimmerman site would tend to substantiate the proposal presented by J. W. Griffin and D. E. Wray (1945) that "The bison appeared east of the Mississippi in large numbers no earlier than 1600 and became extinct in this area by 1800".

The historic Indians of this area utilized the deer, elk, and certain small mammals to a much lesser extent, their principal source of meat being the bison. Conversely, the white-tailed deer formed the basic meat staple in the diet of the prehistoric groups; probably the bison had not as yet crossed the Mississippi River. Also, smaller mammals such as the beaver, raccoon, skunk and muskrat were apparently taken in greater number, and, as a whole, the diet of these Upper Mississippi people (including muskels) corresponded most closely with that of the earlier Woodland and Archaic Indians.

APPENDIX II

ANALYSIS OF CORN COLLECTED FROM SURVEY PIT NO. 4

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A sample of corn from the Zimmerman site (Ls^v13) was collected from a large storage pit (Survey No. 4) with undercut sides from the Grid B area by Dr. Elaine A. Bluhm and Miss Gloria J. Fenner in 1959 and submitted to the Missouri Botanical Garden for analysis. The measurements are shown below with some comparisons and comments.

The tables (Table 19, 20) and co-ordinate graphs (Fig. 22) compare this corn with samples from a number of sites: Plum Island, La Salle Co., Ill.; Crawford Farm,

Rock Island Co., Ill.; Cahokia Mound 34, Madison Co., Ill.; Historic Great Osage (23VE1), Vernon Co., Mo.; Historic Missouri (23SA2), Saline Co., Mo.; and Crosno, Mississippi Co., Mo. In cupule width the Zimmerman site sample appears closest to the corn from the Missouri Village site, but in cupule width combined with row number it is closest to the Crawford Farm sample. In kernal thickness it is closest to corn from Plum Island which is located only two miles down stream. Present evidence indicates that the row number of Indian corn tended to decrease and cupule width to increase in time in the Upper Mississippi Valley in the late prehistoric and early historic period. If the corn sample from the Zimmerman site is representative, it appears to be morphologically later than that from Plum Island, and consistent with its presumed archaeological date (See Chapter VI).

TABLE 19
MEASUREMENTS OF FIVE CORN COB FRAGMENTS, FROM SURVEY PIT 4,
GRID B, AREA, ZIMMERMAN SITE.

Row Number	10?	8	8	8?	8	Mean Row No. 8.4
Kernel Thickness (mm.)	4.4	4.3	3.8	4.5	3.8	Median K. Th. 4.3
Cupule Width (mm.)	7.9	8.7	8.6	9.4	9.5	Median C.W. 8.7

TABLE 20
COMPARATIVE TABLE OF CORN MEASUREMENTS FROM THE ZIMMERMAN SITE
AND OTHER LATE HISTORIC AND PREHISTORIC SITES

	SAMPLE SIZE			Mean Row. No.	Median Kernel Th.	Median Cupule Wid.
	Cobs	Kernels	Total			
Zimmerman	5			8.4	4.3	8.7
Plum Island	17	59	76	10.0 9.6 9.7	3.8 4.3 4.1	7.4
Cahokia, Mound 34. . .	27			11.9	3.6	6.4
Historic Great Osage . .	69			9.7	3.5	
Historic Missouri . . .	5			9.6	3.6	8.6
Crosno	16	36	52	9.9 9.5 9.7	3.4 4.0 4.0	7.0

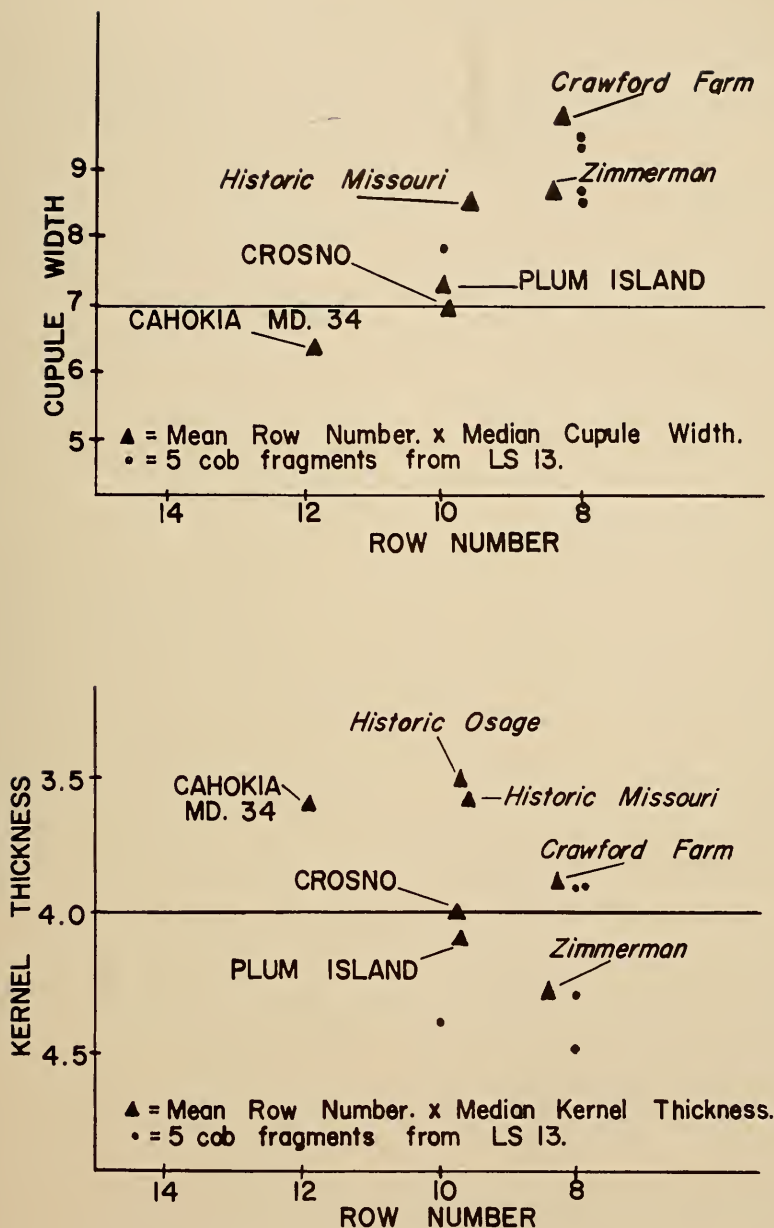


Fig. 22—Charts showing the relationship of measurements on a corn sample from the Zimmerman site to samples from other historic and late prehistoric sites. Above: mean row number plotted against median cupule width; Below: mean row number plotted against median kernel thickness. Historic samples are shown in italics and prehistoric samples are shown in bold face.

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